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GOLLAN'S

INDIAN VEGETABLE GARDEN

INCLUDING A CHAPTER

ON THE

CULTIVATION OF FLOWERING ANNUALS.

9.2.1921

FOURTH EDITION.

REVISED BY

NORMAN GILL, F.L.S

SUPERINTENDENT, KUMAON GOVERNMENT GARDENS.

CALCUTTA AND SIMLA

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PREFACE TO THE FOURTH EDITION.

ALTHOUGH nearly a decade since I last edited "Gollan's Indian Vegetable Garden", the continued demand for this useful and practical work proves that it has lost none of its deserving popularity.

It is to be regretted that with many in this country the meat supply takes precedence, but we have only to look at the general health of those who study their own garden food supply to recognise the importance of good fresh vegetables. Many argue that vegetables can be purchased cheaper from the bazaar or market gardens than grown. This to a certain extent is true, but it must be remembered that market gardeners grow for weight and quantity, and that such produce should not be placed in the same category with the fresh and healthy giving supplies from private gardens. Crops should be gathered as soon as ready and not allowed to become coarse and stringy.

In revising the fourth edition additional cultural directions have been given where considered necessary, and useful hints added. The chapter on flowering plants has been enlarged, and concise information on the construction and upkeep of grass lawns and borders furnished.

17th May, 1920. NORMAN GILL.

CONTENTS.

THE

INDIAN VEGETABLE GARDEN.

CHAPTER I.

General Remarks.

Soils.

The Indian soils, though naturally richer in some localities than in others, are on the whole well adapted for vegetable culture. In the majority of localities the soil met with is a rich alluvial loam of somewhat close texture, into the composition of which enters a considerable proportion of clay, but when it is made open and porous, by continued working, and by frequent applications of manures, whether of vegetable or of animal origin, it soon falls into the mellow, friable condition, conducive to the production of tender, succulent vegetables.

In some localities the soil is of a sandy nature, and in a few, almost pure sand, but soils of this class, when well supported by manures, yield almost as good results as the richer alluvial loams. The worst class of soil for vegetable culture is an exceedingly stiff, tenacious clay, but happily this kind of soil is local. When selecting a site for a vegetable plot, such a soil should be avoided if possible, but when this is not practicable, it may be brought into a fairly fertile condition by turning it over, and exposing it to the action of the atmosphere at every opportunity. The soil is wonderfully enriched by such treatment, and the liberal application of the lighter classes of organic manures,

such as bazar refuse, horse-dung, elephant's dung, leaf-mould, avoiding night-soil or manures of a rich, close texture. Drainage of the land must not be neglected, failure to observe this often results in disaster. In many low-lying sites it will be found necessary to cut drains of varying depths in order to prevent stagnation and to carry off any excess of water.

Manures.

THE variety of substances which may be added to the soil to increase its fertility is almost without limit, but for vegetable culture I have met with nothing in this country to equal the sweepings or garbage of the bazar. Cow, horse, pig's, elephant's, goat's, fowl's and pigeon's dung, leaf-mould, indigo-refuse, bone-dust, night-soil, wood and cow-dung ashes, are all most valuable, but for vegetable cultivation, even more so, when any or all of these substances are mixed together. Horse manure should always be mixed with cow manure or bazar sweepings; if used by itself, it will be found too heating, and very conducive to breeding numerous insect pests which cause so much damage to our vegetable crops. Bazar refuse, as a rule, is made up of a considerable proportion of the special substances above enumerated, together with many other organic substances not named, but which, when added to the soil, all tend to increase its fertility. For purposes of convenience, I shall term bazar refuse, or any mixture of manure, farm-yard manure, throughout this work, but when a certain crop prefers a special kind of manure, I shall mention the fact in the cultural details given under it.

The wanton waste of valuable manure in this country is appalling. Enormous quantities of bones are continuously being thrown away, regardless of their rich fertilizing powers; and millions of tons of cow manure burnt as fuel, if put in the soil as nature intended, its actual value would be enormously increased. It behoves

every person possessing a garden to keep a manure pit into which *all* kitchen refuse, manure and sweepings should be thrown. A three-inch layer of soil occasionally added would assist in its decomposition and prevent smells. If a rule to this effect were enforced, the nation as a whole would benefit in health and wealth.

Before dismissing this subject, I must impress upon the reader the importance of using manure in a thoroughly decomposed condition, especially if the ground is to be sown or planted immediately after being manured. All vegetable and animal substances must undergo decomposition before they can be assimilated by plants as food, and as many substances, if applied to the ground in a fresh state, will lie in it for months before becoming sufficiently decomposed for assimilation, it is thus easily understood how great is the loss of food materials to quick-growing plants, such as vegetables are, when planted in ground manured with substances which they cannot assimilate quickly.

Fresh or half decayed manure is also very attractive to grubs and white ants. If these pests would confine themselves to devouring the least decomposed particles of the manure, they would probably be doing more good than harm, but when they take possession of a plot of ground they also attack the roots of any crop which may be planted there, in common with the organic matter which attracted them, and thus often ruin the whole crop.

Laying out and Preparation of the Ground.

If you have not had previous experience, and there is a professional gardener in the neighbourhood, consult him. Money paid in fees will be more than compensated for, and you will be saved much expense and disappointment.

In laying out a vegetable garden it is not necessary to follow any fixed plan. It will be found convenient,

however, to divide the ground by a central pathway, and in the case of large gardens, by lateral ones branching off at right-angles from the former; by this means the ground will be divided into plots of convenient size. The water channels should be arranged so that they are carried at a gentle slope from the well, or source of water-supply, to the furthermost point of the garden.

A few fruit trees, such as Oranges, Lemons, Mangoes, Lichees, Guavas, Peaches, Apples, Pears, etc., judiciously distributed along the sides of the main pathways, which, by the way, should be at least 8 feet wide, will do no harm, and in exposed places a great deal of good by furnishing shelter, but at the same time tree-planting in a vegetable garden must not be overdone, as few kinds of vegetables thrive under shade. These trees should not be allowed to grow too large, they can easily be kept to a convenient size by pruning. If the garden is on the small side it is better not to plant trees of any kind.

When turning the soil over with the hoe, spade, or plough, preparatory to sowing or planting a crop, its condition should always be examined before commencing operations. If the weather is hot and dry at the time, and the soil in a condition resembling sun-dried brick, much time and labour may be saved by drenching it with water, and a few days afterwards when dry enough to readily fall away or crumble in the hand into a loose, friable mass, it may then be turned over. On no account should soil be worked when in a wet saturated condition, especially when clay enters into its composition. If cultivated in such a state, it falls into a stiff, sour, unthrifty condition, requiring much manuring with loose open manures, and much working and pulverising, before it can be again rendered fertile.

Do not overcrowd your garden by having a lot of plants which are not likely to be made good use of. Study your own requirements; the average mali delights in a conglomeration of vegetation and will sow any and

every seed given to him, regardless of space or future results. A few plants well grown are more serviceable than large quantities which in small gardens receive more or less careless attention.

Irrigation.

THIS is a matter of the first importance in the management of a vegetable garden. Growing plants contain more than 80 per cent. of water, and it has been shown that plants transpire as much as from 200 to 500 pounds of water for every pound of dry matter simultaneously produced; it is with this water that the nutrient constituents of the soil and of the fertilizers applied to it enter the plants. Leaving out the hill districts, it is almost impossible to grow vegetables in India without an artificial supply of water, be it well, tank, canal, or from the local municipal source of supply. Where a canal or waterworks scheme exists, these should always be taken advantage of, but where such sources of supply are not available, the well or a neighbouring tank is the only practicable means of obtaining a supply, but, of course, before it is available for the use of the garden it has to be raised to the surface.

Various contrivances exist for lifting water, but for tanks or wells where the water-level is not under 25 feet from the surface, the endless chain pump, introduced by the Agricultural Department of the United Provinces, is, on the whole, the handiest, cheapest, and most effective appliance at present in existence.

For very small vegetable plots where the water is near the surface, the native method of hauling it up by a bucket and rope attached to a long pole, the latter weighted at the lower end and balanced on two upright posts inserted at one side of the well, is very effective. It is known in the district of Saharanpur as a *dhekli*, and should be familiar to most persons who have resided for some time in the country.

For deep wells, or where the water-level is anything over 30 feet below the surface, the most effective lift is the well-known contrivance termed the *chirsa*, *charsa* or *mhote*, worked by two men and a pair of bullocks. Self-emptying *mhotes* have quite recently been constructed, by means of which the services of one man can be dispensed with. Full particulars can be obtained from the Agricultural Department. Chrome-tanned *chirsas* are the most economical.

Sowing.

In the cultural details which follow, I have indicated a period within which the various vegetable crops treated upon may be sown. As a rule, the period named covers the earliest to the latest date the seeds may be sown, but in many cases, especially when it is not desired or circumstances will not permit of more than one sowing, a date about the middle of the period indicated is generally about the best time to sow. It is, however, always safest to make several small sowings in preference to a large general one, and I would therefore strongly advise such a plan to be followed whenever practicable.

Sowing too early in the season, especially in the case of the winter season vegetables and winter flowering annuals, is particularly to be avoided. Many persons obtain their supply of winter season vegetable seeds in July or early in August, sow the whole of them immediately on receipt, without regard to the various peculiarities of each in the matter of climate, feel angry and disappointed when they fail to germinate, or even when they do germinate and fail to grow, indite an angry complaint to the supplying agency on the bad quality of the seeds supplied, the complaint often reaching the latter weeks before the earliest safe date for a first sowing had arrived. Under such circumstances, it is not surprising that seeds fail; however, what I have stated is not an exaggeration, but an

experience of annual recurrence to all who deal in seed.

The condition of the soil when sowing is a matter of great importance. The surface should always be well broken, rather dry than otherwise, but if moist, it should be moderately so, not wet or saturated. If in the last named condition, nothing should be done, but simply wait until it is sufficiently dry to readily crumble away into finely divided particles when pressed by the hand.

The depth at which to sow seeds depends entirely upon their size. Beans, peas, and all large seeds may be covered over to a depth of two or three inches, smaller seeds from a quarter to half an inch, while very small seeds require only the merest dusting of earth.

Soil for sowing seeds in boxes or pots must never be used in a very dry or wet condition. It is a good plan to prepare the compost several days in advance of sowing. A free admixture of sand and leaf-mould is an advantage, and where fine seeds are to be sown, remove all rough material by sifting. If dry, the whole must be watered, thoroughly turned over and mixed, and not used until mediumly moist. When new, earthenware pots or pans should be first soaked in water for half an hour and allowed to dry before filling with the compost. Sow seeds evenly and thinly, and transplant immediately on signs of overcrowding. These minor but important details are seldom noticed by the average mali, and failure to observe them often ends in disappointment.

Where the watering-can is brought into requisition, see that sufficient water is given to reach the roots, and avoid a mere sprinkling of the surface, which nine out of ten malis frequently do. I have often found the compost of pans and boxes of valuable seedlings, the upper layer wet, but the lower portion pepper dry. Plants can never be grown satisfactorily under such conditions. The question is often asked, when and

how frequent must water be supplied? Certainly not at stated periods; water in excess is as harmful as too little. For growing plants, apply when the compost gets dry and, as before stated, give sufficient to thoroughly permeate it.

After seeds have once been inserted in the ground, the water-supply should be carefully regulated. If the soil and atmosphere are moist at sowing time, no water need be given until the seedlings appear above ground, but if both soil and atmosphere are dry, water should be given immediately after sowing, and the supply repeated daily if necessary, but at no time should more or less be given than is necessary to keep the soil moderately and uniformly moist.

Do not force the growth of seedlings, and when sown in boxes or pans in the shade the sooner they are inured to the full light the stronger their constitution and the less liable to the attacks of fungoid diseases and insect pests. The seedlings should not be allowed to become crowded but transplanted at an early stage.

Although in the hills vegetables can be had much earlier in the season from autumn sowings, these must be made with caution and due regard to their requirements during a most treacherous season. Special arrangements are necessary for protection from hail and snow. Mats and bundles of straw should always be kept in readiness for use when necessary, and these should be removed immediately a break occurs in the weather so as to afford all the light possible to the plants.

Planting.

Most malis are well acquainted with the correct methods of planting their vegetables, etc., but before allowing them to do so it will be found advisable to see that the ground has been well dug and manured. It may appear all right on the surface, but a few holes

dug here and there will often expose faulty and careless work which needs rectifying.

There are two glaring and common mistakes made when putting down trees and shrubs, which are responsible for killing off thousands of valuable plants annually. These are planting in pits, and planting too deeply. When planted in a pit as shown in Fig. 1, a considerable proportion of the water from the surrounding land is drained into it, often forming a small tank. Plants are thus often submerged for many weeks during the rains a considerable distance above the collar or transitional portion between stem and root (*a*). Fig. 2 shows the correct way of planting; if a ridge is necessary for watering, this should be above the ground level as at (*b*) and may easily be removed during continuous rainfall. What is meant by planting too deeply is well explained by Fig. 1, where it will be observed that the collar (*a*) is buried a considerable distance below the ground level. Allowance should be made for the subsiding of the newly dug soil when planting, and the roots well spread out and firmed in.

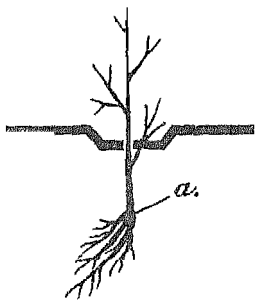

Fig. 1.—*Faults.*

1. Planted in a pit.
2. Planted too deeply.
3. Roots not spread.

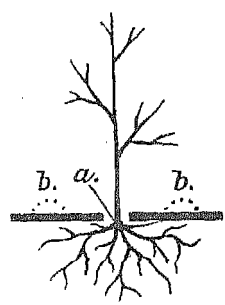

Fig. 2.—*Correct.*

Quick-growing vegetables, such as Cauliflower and Cabbage, are often benefited by fairly deep planting, but in no case should the lower leaves be buried. Where seedlings are taken from seed beds in a cool, shady spot and have to be planted in a hot sunny position, it will be wise to shade them from the fierce sun's rays for a day or two until the plants have become established. This is easily done by the use of small, leafy twigs.

Storage of Seeds.

When seeds are received in hermetically sealed boxes the latter should be kept intact until the seeds are actually required for sowing. It often happens, however, that the box contains one or two varieties that should be sown several weeks earlier than the others, and in order to get possession of these, the box must necessarily be opened: this must be done in a very dry atmosphere. In nine cases out of ten, when a box is once opened, the appliances necessary for resoldering it are not at hand, so it is generally closed, perhaps as carefully as possible, but not so tight as before being broken into, with the result that damp finds its way into it and destroys the vitality of the seeds. When a box of seeds is once opened, it is therefore a good plan to make use of such seeds as may be required, and store away the remainder in corked bottles. The latter should be well washed, and placed in the sun for a few hours, first in an inverted position, and then in an upright position, until quite free of all moisture. Above all things, avoid storing seeds in a damp bottle or box.

The patent screw-topped tin boxes, sent to this country of late years by some European seed firms, are a great improvement over the old hermetically sealed boxes for keeping seeds, but the screw tops often fit loosely, and even in the case of these improved boxes it is safer to transfer the seeds to well-corked bottles. Seeds should be ordered so as to arrive about sowing time; by doing so a great advantage is gained

inasmuch that a far greater percentage germinate, and the seedlings are more robust.

Many persons in this country obtain their seeds from dealers settled in the country, or from one or other of the Horticultural Gardens throughout the country which retail seeds, packed in paper parcels or in parcels covered by oil-cloth. If it is the proper time for sowing when the seeds are obtained, the seeds are likely to be quite as good as those obtained direct from England in hermetically sealed boxes, but if too early for sowing, or if the weather is not favourable for doing so, the seeds should at once be transferred from their paper or cloth covering and stored in thoroughly dried bottles until such time as they can be sown. As a rule, seeds will not deteriorate or lose vitality when tightly packed in a parcel during the few days they may be in transit by post, but if allowed to lie about, in what to the eye may appear a tolerably dry place, they may still be far from safe from the damp which may pervade the atmosphere.

Seed Gathering.

All the summer season varieties of vegetables are commonly raised from seeds grown in this country, and the same practice may with advantage be followed in the case of certain of the winter season kinds. Some varieties of the latter, especially those which are biennials, refuse to flower before being withered up on the advent of hot summer weather, but others, particularly those which are annuals, flower profusely, and ripen an abundant crop of seed. A few kinds quickly degenerate, and must be renewed from imported stock from time to time, but there are others which may be grown for a long series of years without showing any, or at least, very little, degeneration if care is taken to select from the best plants. Careless selection is in the majority of cases responsible for the degeneration of most of our Indian grown seeds, whether vegetables or flowers.

The best vegetables and flowers are often used for the table and seed saved from the remaining plants; if seed is required, mark down the best plants expressly for this purpose.

Not a few of our malis allow large quantities of vegetables and flowering plants to seed, for the purpose of distributing or selling to their friends; the harvest is seldom, if ever, shown to their masters, who little think that seed crops quickly impoverish the soil. It would therefore be as well to see that if plants are allowed to run to seed, they are permitted to do so with some legitimate object in view.

In order to assist those who may care to indulge in the practice of growing their own seeds, I append a list of the leading varieties of Winter Season Vegetables, which may be more or less successfully acclimatised, with a few brief remarks on the peculiarities of each.

Artichoke (Globe).—May be grown for a long series of years without showing much degeneration.

Artichoke (Jerusalem).—Succeeds well if raised from acclimatised tubers.

Bean (Broad).—The long podded varieties show no degeneration over a long series of years, but the Broad-Windsor section quickly degenerate.

Beet.—Plants raised from imported seed invariably fail to flower, but a fairly good acclimatised variety exists in the Saharanpur gardens.

Carrot.—Degenerates considerably, must be renewed every three or four years from imported stock.

Cauliflower.—Excellent if sown early in the season, but the best of acclimatised stock is very degenerate if sown late.

Celery.—Seeds freely, but degenerates in the first year. Imported seed only should be sown.

Cress.—Results equal to imported seeds.

Endive.— Do. do. do.

Dill.— Do. do. do.

Fennel.— Do. do. do.

Lettuce.—Results equal to imported seed, if seed is gathered from the best developed plants.

Mustard.—Results equal to imported seed.

Onion.—Results even more satisfactory than when raised from imported seed.

Pea.—Dwarf varieties are inclined to become tall, but produce practically as good as from imported seed.

Potato.—Succeeds well from acclimatised tubers, but only thoroughly matured tubers should be used.

Radish.—Results equal to imported seeds.

Salsify.— Do. Do. do.

Spinach.—Degenerates in the course of a few years; should be renewed from imported stock from time to time.

Tomato.—Results almost equal to imported seed.

Turnip.—White-fleshed varieties acclimatise readily, and are excellent if sown early, but show degeneration if sown late. Yellow varieties refuse to become acclimatised.

Common varieties of the winter season class of vegetables, not named in the above list, must be grown from imported seed.

Useful Hints.

A SMALL GARDEN well cared for gives greater pleasure than a large garden badly kept.

Select a mali with a natural love for his work.

A good mali keeps a keen-edged knife.

Encourage good work by a few kind words.

Pay your mali well, if he does wrong fine him severely.

Avoid giving too many orders.

A discontented mali is worse than none.

The mali who is afraid of his master's servants is not worth his salt.

Never allow your mali to exchange or sell garden produce without permission.

The best vegetables are those quickest grown.

It is a bad practice to grow more vegetables or flowers than can be conveniently managed.

Pot plants are expensive to keep in order, they require daily attention, and should not be encouraged except in their proper places.

No hard and fast rule can be laid down for watering plants, they vary considerably in their requirements.

Do not overwater newly planted or weakly plants.

If possible, arrange for protection against destructive animals.

Healthy plants are less liable to attacks from insect pests and fungoid diseases.

CHAPTER II.

Winter Season Vegetables.

Aniseed.

Pimpinella anisum.

Vernacular Name :—Sonf.

Plains.—Sow from middle of October to end of November.

Hills.—Sow from beginning of April to end of May.

This is an annual, a native of Egypt, but common in this country and other parts of the world as a cultivated plant. The leaves are used for garnishing and for flavouring purposes; and the seeds are employed in confectionery and for distillation.

The plant is of easy culture, and will thrive with little attention in any good soil. The seeds should be sown in shallow drills made at 9 inches apart, any time between the middle of October to end of November, and the young plants, when a few inches high, thinned out to 4 inches asunder. All after-attention is confined to weeding occasionally, and watering about once a week during dry weather.

In the hills, if sown during April or May, little difficulty will be experienced in raising it.

Artichoke, Globe.

(Cynara scolymus.)

Vernacular Names :—Hatichuk, Kunjor.

Plains.—Sow from middle of August to end of October.

Hills.—Sow from beginning of March to the end of May. Can also be sown about the middle of October if protection can be afforded.

This is a perennial plant, a native of the north of Africa and south of Europe. It is cultivated for the immature flower heads, of which the fleshy receptacle and base of the involucral scale are the parts used. It is a most delicious vegetable and is deserving of greater popularity. The flower heads should be cut before any seed has been formed. It thrives in most parts of India with little attention, and when planted in well drained ground, will live through the heat and damp of our summers. There are several varieties named in seed lists, but the kinds most generally grown are those known under the names of Green Globe and Purple Provence.

The artichoke is generally raised from seed in the plains, but sometimes it is propagated by taking offsets from old plants and planting these in autumn. It freely ripens its seed in this country, but the heads produced by the progeny of acclimatised stock, although obtained in greater abundance, are individually not so large as those yielded by imported stock. The same remark also applies to the produce of plants taken as offsets from old plants.

Strong seedlings and established offsets are often obtainable from hill gardens during October and November. They come into bearing at a much earlier stage in the plains than the newly sown seed.

When raised from seed, the latter should be sown broadcast in well-drained seed beds, and covered over with about three-fourths of an inch of fine soil, between the middle of August and end of October. During dry weather, water should be applied every second or third day from watering pot with a fine rose, but when the weather is wet, every facility should be afforded for rain water to escape from the beds as quickly as possible. Direct shade from sun, or shelter from rain, is not necessary at any time.

When the young plants have made three or four secondary leaves, they may be taken up and replanted

in the open ground, in rows 4 feet apart, and the same distance from plant to plant.

The best soil for the artichoke is a loose, deep, sandy loam, but it will also thrive in heavier soils. Before planting, the ground should have been deeply dug over and enriched with a liberal application of decomposed manure. When the soil is light and sandy, the best manure to use is a mixture of decomposed cowdung and bazar refuse in equal proportions, but when it is stiff and clayey, decomposed stable litter should take the place of the cowdung.

If sufficient manure is not on hand for a liberal application to the whole surface of the ground, holes, 2 feet wide and 1½ feet deep, may be dug at 4 feet apart, the soil returned again mixed with two or three basketfuls of manure, and the plants inserted in the centre of these prepared holes. All after attention consists in keeping the ground free of weeds, occasionally stirring the soil between the rows, and watering about once a fortnight when the weather is dry.

At *hill* stations, the seeds should be sown, or the offsets taken off and planted, during the spring months. As the artichoke does not degenerate in a cool climate, a plantation when once established in the hills, may be renewed with success from year to year by offsets.

Where seedlings can be afforded protection during the winter months autumn-sown seed is recommended.

Artichoke, Jerusalem.

HELIANTHUS TUBEROSUS.

Plains.—Plant the tubers from beginning of March to end of May.

Hills.—Plant from middle of February to middle of April.

THIS is a hardy tuberous-rooted perennial, a native of North America. The roots are a popular vegetable,

and are prepared for the table in various ways, but generally they are simply boiled, and served up with milk-sauce, or used for flavouring and thickening soups.

The plant thrives with little attention in this country, and is raised by planting the tubers, or sets as they are termed, 3 inches deep, in any good soil, in rows 2½ feet apart, and one foot from set to set during the hot weather months. When the shoots have attained a height of about a foot, the rows should be earthed up in the same manner as a potato crop. All after-attention primarily consists in keeping the ground free of rank weeds, and irrigating between the rows about once a week during dry weather.

The tubers are ready for use in September, but are not fully matured until the commencement of December. When quite ripe, they may be dug up and stored in dry sand, but if the plot is not required for another crop, they should be allowed to remain in the ground and dug up for use as required, as they preserve their delicacy of flavour and keep better when undisturbed.

The cultural treatment required at hill stations is the same as has been detailed for the plains, only planting should be done as early after the middle of February as practicable.

As most gardens in the hills are subject to the depredations of porcupines harboured by the surrounding jungle, the artichoke plot should be enclosed within a temporary, though strong, fence of thorny brushwood, or better still, fenced in with wire netting, in order to prevent the crop from being rooted up by these animals.

Asparagus.

ASPARAGUS OFFICINALIS.

VERNACULAR NAMES :—MARCHUBA, PARAGAS, VILAIYTI KARUA.

Plains.—Sow from beginning of September to end of November.

Hills.—Sow from end of February to end of May.

THIS is a hardy perennial, a native of the seacoasts of Europe and some parts of Asia, and is grown for the immature shoots, which are greatly esteemed as a vegetable. It grows readily enough in most parts of India, but the produce, with the exception of that grown in our hill stations, is not comparable with that of Europe, the shoots being thin and weak, and deficient in flavour. In rich, friable, well drained soils, a fair degree of success is attainable in this country with the cultivation of this plant, but when the soil is heavy and stiff, the produce is practically worthless.

Failure to grow good asparagus in the plains or hills is generally the result of too early cutting. Although it is difficult to resist the tempting shoots during the second year's growth none should be cut until the third year by which time the plants will have developed a strong root system.

The seeds should be sown broadcast in nursery beds, and covered over with half an inch of fine soil, from the beginning of September to the end of November. When the young plants have made shoots 9 inches or a foot long, they should be taken up and planted in their permanent quarters in the open ground in beds prepared as follows :—

Overspread the surface to a depth of 6 or 8 inches with decomposed cowdung, stable litter, and bazar refuse, in equal proportions ; then dig over to a depth of 2 feet, taking care to thoroughly incorporate the manure with the soil during the operation. Allow the ground to settle down for a week or two, then lay it out in beds 5 feet wide, and of any desired length. After the beds are ready for the reception of the plants, remove the latter from the seed-bed and replant them in the beds prepared for them, in three rows, 15 inches apart, and one foot from plant to plant. When transplanting care should be taken not to injure any of the roots, which should be spread out in the wide but shallow holes, and

covered over with 3 inches of rich friable soil. Water immediately after planting, and repeat the supply, once a week, during dry weather.

During the first two years, the plantation should be encouraged to throw up as many shoots as possible, as good over-growth means a correspondingly good under-growth of roots, and the latter when plentifully produced mean strong, healthy, free-bearing crowns.

The beds should be top-dressed once a year with a coating of decomposed manure and a sprinkling of common salt and the soil lightly dug over with a fork. Late in December or during January is the best time to perform this operation. After it has been completed, water should be freely given and in March, when the young shoots begin to appear, the best of these may be cut for use, and the weak ones allowed to grow up; providing of course that the plantation is sufficiently advanced to be cropped.

A second crop can be forced on towards the close of the rains by cutting down the summer growth of shoots, and forking in a light dressing of decomposed manure, but this is a weakening measure, and should not be adopted if it is desired to preserve the plantation in a bearing condition for a series of years.

The duration of a plantation in a profitable condition will greatly depend on the soil and attention given. If the former is suited to the plant, and if all the cultural details are carefully followed, five to six years are not too long a period to expect fairly satisfactory results.

The treatment required at hill stations is the same as detailed for the plains, but at such stations the young plants may be allowed to remain for a year in the seed-bed before transferring to the open ground. Sowing and planting should be done in the spring months, or as soon as possible after all danger of the occurrence of hard frosts is over. Too early cuttings are responsible for many failures to grow good asparagus in this country. The plants should be grown on as strongly

as possible for at least two seasons before any shoots are taken.

It will be as well to note that malis and coolies are passionately fond of the delicate young shoots.

Basil.

BUSH BASIL—OCIMUM MINIMUM.

SWEET BASIL—OCIMUM BASILICUM.

VERNACULAR NAME :—GULAL TULSI.

Plains.—Sow from beginning of October to end of November.

Hills.—Sow from beginning of March to end of May.

THESE are annual herbs, natives of India and Persia. Both are cultivated for their fragrant and aromatic leaves, which are used for flavouring purposes.

The common Indian *tulsi* (Ocimum sanctum) is a closely allied species. This plant is held sacred by the Hindus, and is commonly cultivated near their temples. Its leaves are also fragrant and aromatic, and can be employed for the same purposes as the basils of English gardens.

The seeds should be sown in pots filled with light soil, or broadcast in nursery beds, during October or November. When the young plants are large enough to handle, they may be replanted in pots, allowing five seedlings to a 12-inch pot, or put out in the open ground in rows 15 inches apart, and one foot from plant to plant. All after-cultivation primarily consists in occasionally stirring the surface of the soil, and supplying water when necessary.

When cultivated in pots, basil will often live until the close of the rainy season, but when grown in the ground, the plants usually perish shortly after the rains commence.

The cultural treatment required at hill stations is the same as detailed for the plains, only substituting the spring for the autumn months as the season of sowing

Bean, Broad.

FABA VULGARIS.

VERNACULAR NAMES :—BAKLA ; SEM.

Plains.—Sow from middle of October to end of November.

Hills.—Sow from beginning of March to end of May. Autumn sowings may be made if protection from severe weather can be arranged for.

THIS is an annual, and one of the oldest cultivated vegetables we possess. Some uncertainty exists as to its native habitat, but it is generally supposed to have originally come from Persia. There are two classes of broad beans cultivated in gardens known as Long Pods and Broad Windsors. The pods of the former are from 6 to 9 inches long, and contain from 4 to 6 medium-sized beans ; those of the latter are from 3 to 6 inches long and contain from 1 to 3 large flat beans. There are numerous sub-varieties of both named in the lists of European seedsmen, but the difference between many of them is more apparent in the lists than when seen growing side by side. In this country the long-podded sorts are the most prolific, and they are also easily acclimatised, while the Broad Windsors do not bear so well, nor do they so readily acclimatise.

A dwarf small-podded variety (seo-chana) is grown by native market gardeners in some districts. Botanically it is the same species of bean as the introduced European forms, but looked at as a variety, it is totally distinct from the latter. When ripe, its seeds are about the size of pea, slightly elongated, and have an intensely hard, black, glossy skin.

The broad bean should not be sown before the middle of October in Northern India, as the young plants are rather susceptible to heat. It requires a heavy, rich friable loam, but will also thrive in light soils, if these are well enriched with manure. The ground for cultivation may be prepared as follows :—

Overspread the surface with a thick coating of decomposed cowdung and bazar refuse, and then plough, or dig over, to a depth of nine inches. After the soil has been well pulverised, and the surface made smooth and level, lay it out in shallow trenches or depressed rows, two feet wide, three inches deep, and three feet apart, or five feet from centre to centre of the shallow trenches. When the ground has thus been laid out, draw two furrows at one foot apart, and three inches deep, along the surface of the trenches, and drop the seeds in these furrows at five or six inches apart, covering over with three inches of soil. When the plants grow up they will thus form a double row. Some writers recommend soaking the seeds in tepid water for an hour or two before sowing to hasten germination, but this is not essentially necessary. If the trenches are flooded with water immediately after sowing, the same end will be attained.

When the plants are about 15 inches high, the trenches should be filled up with earth, and the latter carried up a few inches above the level of the spaces between the rows. Before this operation, water should be applied by flooding the trenches, but after the operation, it has to be given by flooding the spaces between the rows.

When the plants are in full flower, or when about three feet high, the point of each shoot should be nipped off between the forefinger and thumb, or they will continue growing and flowering without setting pods. Broad beans are often said to fail in this country, but in the nine cases out of ten, failure is due to ignorance of the necessity of performing this operation ; also to allowing too many shoots to spring up from the base, one or two strong healthy shoots being quite sufficient.

The treatment required at hill stations is the same as detailed for the plains, only substituting the spring for the autumn months as the season of sowing, except where autumn-sown seed can be protected.

Bean, French or Kidney.

PHASEOLUS VULGARIS.

VERNACULAR NAMES :—SEM, VILAIYTI SEM.

Plains.—Sow from middle of August to middle of October.

Hills.—Sow from beginning of April to middle of June.

THIS is a delicate annual, the native country of which is not known. There are innumerable varieties. Considerable difficulty is usually experienced in raising this vegetable in the plains of Northern India. It seems to thrive best in gardens of limited area enclosed by walls, or in those which are well sheltered by high arboreal growth, and possessing light, rich, well-drained soils. In open, exposed gardens, especially if the soil is heavy and stiff, failure is the most common result of attempts to grow this plant. In choosing a position for its cultivation, a spot overshadowed by tall, high, branching trees is one of the best which can be selected. The position should afford both light and shelter, and at the same time be free from too dense a shade.

The seeds should be sown at 6 inches apart, and one inch deep, either on ridges, or in rows 18 inches as under, from the middle of August to the middle of October. Early sowings, or those made before the rains are over, should be on ridges, while later sowings, or those made after the rains have ceased, should be in rows drawn in beds arranged for irrigation. The soil should be light and friable, and enriched by any kind of decomposed manure of the farm-yard class. After-cultivation

consists primarily in keeping the ground free of weeds, stirring up the soil occasionally, and irrigating about once a week when the weather is dry.

The French bean thrives better at hill stations than in the plains. The treatment required is the same as detailed for the latter, only substituting the spring for the autumn months as the season of sowing, and omitting the recommendation to sow on ridges.

Bean, Scarlet Runner.

PHASEOLUS MULTIFLORUS.

VERNACULAR NAME :—SEM.

Plains.—Sow from middle of August to middle of October.

Hills.—Sow from beginning of April to end of June.

THIS is a perennial of climbing habit, a native of South America, and is grown for its immature pods, as is the case with the French bean. Runner beans should be sown at the same time, and in the same kind of situation and soil as recommended for the French bean, but instead of sowing on ridges, or in rows, they should be sown in single or double lines, at 6 feet apart, and supported on sticks or branches, in the same manner as peas.

The Lima pole bean (Phaseolus lunatus) is a species of similar habit to the common runner bean, and may be sown at the same time as the latter.

Runner beans thrive with little care or attention at hill stations, and may be sown any time during the spring and early summer months. As they form excellent screens for hiding outhouses and unkempt corners, space for growing a few plants can generally be found in such positions, if the cultivable portion of the garden is of limited area.

Whether Broad Beans, Kidney Beans or Scarlet Runners, unless required for seed purposes, the pods should be gathered before the seed hardens, by doing this the plants continue to bear for a much longer period.

Beet.

BETA VULGARIS.

VERNACULAR NAME :—CHAKUNDER.

Plains.—Sow from middle of August to end of October.

Hills.—Sow from beginning of March to end of May.

THIS is a hardy biennial, a native of the seacoasts of Southern Europe, and is cultivated for its fleshy roots.

I have never seen a plant of beet raised from imported seed attempt to flower in this country, but an acclimatised form is found in gardens nevertheless. Its roots when seen at their best are not inferior to those raised from imported stock, but they do not remain in season so long, owing to a habit the plants have of shooting into flower with the advent of the warm weather. In spite of this disadvantage, it is a useful variety to grow. The young plants are not so susceptible to the heat and damp which prevail in the early autumn months, as those raised from imported seed, therefore, for sowing before the rains have ceased, the acclimatised form is superior to the imported kinds.

Beet should be grown in an open situation, clear of the influence and shade of trees in good, friable soil, and may be sown from the middle of August to the end of October in ground prepared as follows :—

Overspread the surface with 4 or 5 inches of decomposed manure of the farm-yard class, and dig the ground over to a depth of 15 or 18 inches, taking care to thoroughly incorporate the manure with the soil during the operation. After the surface has been well pulverised and levelled, sow the seeds at one inch apart and

one inch deep in drills at 15 inches as under. If the soil is moist at sowing time, no water need be given until the young plants appear, but if it is dry, water immediately after sowing. When the young plants are 2 inches high, thin out to 3 or 4 inches apart, and a few weeks later on, finally thin out to 9 inches. When blanks exist a few additional good seeds may be sown, transplanting is not recommended although often done. After attention consists of the usual routine of weeding when needed, occasionally stirring the soil between the rows, and watering about once a week when the weather is dry.

When sowings are made before the rains are over, or even after they have ceased when the soil is stiff and heavy, it is a better plan to sow on ridges than in drills. The former should be made 6 or 8 inches high and 18 inches apart, and the seeds inserted in drills drawn along both sides of the ridge, a little below the summit. When the ridge system is adopted, water should be applied by flooding the furrows between the ridges.

The treatment required at hill stations is the same as detailed for the plains, only substituting the spring for the autumn months as the season of sowing.

Borage.

BORAGO OFFICINALIS.

Plains.—Sow from beginning of October to middle of November.

Hills.—Sow from beginning of March to end of May.

THIS is an annual, a native of Europe. It is not much grown in India, but succeeds very well as a cold weather annual. Its leaves and flowers are sometimes used for garnishing, but more frequently as an ingredient in claret cup.

It may be sown in pots or boxes any time after the beginning of October to the middle of November, and

when the seedlings have made two or three secondary leaves, they may be planted 18 inches apart in any good soil.

After-attention merely consists in weeding when needed, and watering once a week when the weather is dry.

At hill stations, it may be sown from the beginning of March to the end of May, but not later, or the rains will destroy the young plants.

Borecole or Kale.

BRASSICA OLEARACEA, VAR. ACEPHALA.

Plains.—Sow from beginning of September to the end of October.

Hill.—Sow from end of February to end of May or during September and October, if the seedlings can be given protection.

THIS is one of the numerous subdivisions of the cabbage family, and is grown for its leaves, or greens as they are popularly termed. It is a common plant in home gardens, but is not often met with in India. It succeeds very well in this country, but the leaves produced are somewhat tough and flavourless when cooked. Considerable cold combined with frost is required to make these sufficiently crisp and tender for culinary purposes, and as such conditions of climate are only found at high elevations in this country, the kale cannot be classed as a vegetable suited for cultivation in the plains. There are many varieties named in lists, and as those with densely-curled leaves furnish excellent garnishing material, these may be grown with advantage for such a purpose.

The seed may be sown broadcast in nursery beds from the beginning of September to the end of October, and the young plants, when 3 or 4 inches high, planted in open, in rows 2 feet apart, and 18 inches from plant to plant. This is a sufficient distance for the dwarf

curled varieties, but kinds like the Tree Cabbage and Thousand-headed Cabbage require the rows to be placed at 4 feet apart, and 3 feet from plant to plant. The soil should be rich, but manure is not necessary if the plot had already been manured for a previous crop. When the plants are rather more than half grown, the rows should be earthed up in the same manner as a potato crop. After-attention primarily consists in weeding when needed, and watering about once a week during dry weather.

The treatment required at hill stations is the same as detailed for the plains, only substituting the spring for the autumn months as the season of sowing, except when the seed is autumn sown in which case protection is necessary during winter.

Brussels Sprouts.

BRASSICA OLERACEA, VAR. BULLATTA GEMMIFERA.

Plains.—Sow from beginning of September to end of October.

Hills.—Sow from end of February to middle of May, and in autumn.

THIS is a tall growing variety of cabbage, but instead of producing a single stocky head like the ordinary form, it yields a number of small heads or sprouts on all sides of the tall stem. It thrives very well in this country, but as the sprouts do not form until towards the close of the cold weather, it only remains in season for a short time. It is, however, a popular and much esteemed vegetable, and worthy of a place in every garden.

The seeds should be sown broadcast in nursery beds from the beginning of September to the end of October. The position chosen for the beds should be open, and free from the shade of trees. When the plants are 4 or 5 inches high, they should be planted in the ground in rows 2 feet apart, and 15 inches from plant to plant. Any good garden soil will suit the sprout, but liberal

manuring when preparing the ground is essentially necessary for success. When the plants are rather more than half grown, a little earth should be drawn up to the base of the stems, but the earthing up must not be overdone, as the sprouts are often formed low down on the stems. Decayed or decaying lateral leaves should be removed from time to time as noticed. Further attention consists of the usual routine of weeding when needed, and watering about once a week when the weather is dry.

The treatment required in the hills is the same as detailed for the plains, only substituting the spring for the autumn months as the season of sowing, unless ample protection can be afforded the young plants during extreme cold, when they may be sown during September and October in a cool frame.

Cabbage.

BRASSICA OLERACEA, VAR. CAPITATA.

VERNACULAR NAMES :—KOBI, GOBI, BUND GOBI.

Plains.—Sow from middle of August to end of October.

Hills.—Sow from latter end of February to end of May, and in autumn.

THIS is a hardy biennial, a native of the seacoasts of various parts of Europe. It is one of the most popular of vegetables with the European population of this country, but is not held in the same high estimation by Indians in fact, it is rarely grown by the latter in Northern India, except in centres where a European demand exists. There are innumerable varieties of four classes, Dwarf Early Whites, Dwarf Savoys, Large Late Drumheads and Red Pickling Cabbage.

The seeds should be sown broadcast in beds and covered over with about ½ inch of fine soil, from the middle of August to the end of October. The beds should be made in an open situation on moderately

rich soil, and should possess a surface area of 25 square feet for every ounce of seed sown. If the soil is moist at sowing time, no water need be given until the plants appear, but if it is dry, water should be at once given from a fine rosed watering pot, and the supply repeated whenever necessary. Shade should be afforded for a few hours during the hottest part of the day immediately after sowing, and for a few days after the young plants appear, but care should be taken not to overshade, or the plants will be drawn up into a weak, leggy, and generally unfit condition for transference to their permanent quarters in the open ground.

As early sowings are apt to be destroyed by heat and excessive moisture, only small chance sowings should be made in August and during the early part of September. The main sowings may be made after the middle of the last named month or during October. When the young plants are 4 or 5 inches high they should be planted out in ground prepared as follows :—

Overspread the surface to a depth of 4 or 5 inches with decomposed manure of the farm-yard class a month or six weeks before planting is required to be done, and dig over to a depth of 15 or 18 inches, thoroughly incorporating the manure with the soil during the operation. After the surface has been pulverised and levelled, lay the ground out in drills, 4 inches wide, 3 inches deep, and 18 inches apart, and insert the plants down one side of the drills at 18 inches asunder. These distances are sufficient for all classes of cabbage, excepting the large growing Drumheads. For the latter, allow 3 feet from drill to drill, and 2 feet from plant to plant. Water immediately after planting, and repeat the supply about once a week when the weather is dry. Weed when needed, and occasionally stir the soil between the rows with a fork. When the plants are rather more than half grown, earth should be drawn from the spaces between the rows up to the base of the stems. After this operation has been accomplished, the plants should appear as if planted on ridges from 5 to 8 inches high. All

further attention consists in keeping down rank weeds and flooding the furrows between the ridges once a week as before when the weather is dry.

Small heads of the Drumhead class of cabbage may be had in season in the plains in Northern India up to the end of July. In order to secure this result, the seeds should be sown about the beginning of December, and the young plants placed out in January at the distances apart given for the Dwarf Early Whites.

The cabbage is not so liable to the attacks of insects in this country as in Europe, but during some seasons a species of caterpillar appears. When it is noticed the only successful remedy for its destruction is hand picking until exterminated.

The mode of cultivation required in the hills is the same as detailed for the plains. For gardens situated at from, 5,000 to 7,000 feet altitude autumn sowings are recommended. Crops from spring-sown seed are invariably destroyed by numerous sucking insects and caterpillars.

When it is desired to have heads fit to use during the early summer months, the seeds should be sown in beds in autumn, afforded protection during very severe weather and the young plants removed to the open ground in spring. Spring sowings will not produce heads fit to use until late in summer, or during the early winter months. In order, therefore, to have a continuous supply, sowings should be made at both seasons.

Carraway.

CARUM CARUI.

VERNACULAR NAMES :—ZIRA, JIRA, SHIA-JIRA.

Plains.—Sow during October.

Hills.—Sow from beginning of March to end of April.

Cauliflower.

BRASSICA OLERACEA, VAR. BOTRYTIS CAULIFLORA

VERNACULAR NAMES :—PHULKOBI, PHUL GOBI.

Plains.—Sow acclimatised seed from middle of June to end of August. Sow imported seed from beginning of *September to end of October.*

Hills.—Use imported seed only. Sow from end of February to end of April, and in autumn with protection.

THIS popular vegetable is too well known to call for any description, and is perhaps the most esteemed of the varied forms which have sprung from Brassica oleracea or wild cabbage. There are numerous varieties named in seed lists, most of which readily acclimatise in Northern India. They change character to a certain extent, but show little degeneration except when sown late in the season. The warm forcing climate of this country causes cauliflower to assume an earlier and quicker maturing habit than it possesses when newly received from Europe, or in other words, it is transformed from a temperate to a semi-tropical plant, and has to be treated as such. If acclimatised seeds are sown in Northern India during the months of June, July and August, the plants produce most excellent heads, but if seed from the selfsame stock is sown later on, or in September and October, the plants shoot up into flower without forming heads, greatly to the annoyance and disappointment of the grower. If imported seeds are sown during the same months as I have named for sowing acclimatised stock, the seeds often fail to vegetate, and when they do come up, the seedlings are very apt to die off owing to the heat and excessive moisture then prevailing. In order to have a long succession of heads in season, it is a good plan to make use of both classes of seed, *i.e.*, acclimatised for early or monsoon sowing, and imported for late or autumn sowing.

As the young plants are rather more delicate than is the case with other members of the Brassica family, the seed-beds require more careful preparation, and the seedlings more after-attention than is needed by other members of that tribe.

The beds should be prepared before the rains begin in an open, sunny situation, and should be about 5 feet by 5 for every ounce of seed sown. For all early sowings they should be raised fully a foot above the surrounding surface in order to secure good drainage, but for sowings made after the rains are over, they may be prepared on the level ground. The soil should be friable and fairly rich, but not highly manured. I find old potting earth and some well decayed leaf-mould, worked in a few inches deep over the surface of the beds, to be the best manure which can be given. After completing these arrangements, the seed should be sown broadcast, and covered over with $\frac{1}{8}$ inch of light, finely-sifted soil. If the weather is dry at the time, water immediately after sowing with a fine rosed watering pot, but if the rains are then in progress, withhold water except during the occurrence of a long dry break. The seeds should never be sown when the soil is in a saturated condition. It is, of course, almost impossible to prepare a dry seed-bed during the rains, but if the beds were raised before the rains began, as already recommended, one day of bright sunshine will often dry the soil just to the condition it should be in for the reception of seed.

Shade should be given to all sowings for a few hours during the hottest part of the day, and withdrawn when the seedlings are about a week old. Early sowing may, however, be protected with advantage with the shading material during the occurrence of heavy rain, but the covering should not be kept over the plants an hour longer than is absolutely necessary, or they will grow up weak, leggy, and in a generally unfit condition for transference to the open ground. Be careful not to over-do the shading, the less shade the more robust the

plants and the less liable to attacks from insect pests and fungoid diseases.

First sowings, or those made in June and July, are all the better for being once transplanted before being finally planted to their permanent quarters in the ground. The young plants of these sowings should, therefore, be carefully taken up from the seed-bed, and pricked out in new beds, made up as before, in lines 3 inches apart and 2 inches from plant to plant. If this plan is followed, the plants will be found to be much sturdier and hardier when the season for planting arrives, than if they had been allowed to grow on in the seed-beds.

The ground for the ultimate reception of the plants should be prepared in the same manner as recommended for cabbage, and the plants put out in rows 2½ feet apart and 2 feet from plant to plant. These distances will answer for all varieties excepting Veitch's Autumn Giant. This being a larger growing variety than any of the others, it requires the rows placed at 3 feet apart and 2½ feet from plant to plant. All after-cultivation is exactly the same as has been recommended for cabbage.

Cauliflower is subject to the attacks of several insect enemies. When in the seed-bed, a small, dark-green caterpillar is sometimes very destructive to the young plants. When it is present, the leaves should be dusted over every second or third day with the ash of cowdung or gently sprayed with a weak solution of phenyle. If the latter is used, a teaspoonful of the fluid should be allowed to every gallon of water. After the plants have been put out in the ground, and up to the time that the heads are ready for cutting, few insects seem to trouble them, but if a few are grown on for seeding purposes, these often get attacked just before or soon after coming into flower by Aphis or green fly. Frequent syringings with a solution of phenyle, double the strength of that recommended for the plants when young, will soon exterminate this pest. After the plants have formed their

seed pods they are sometimes troubled with a small greyish bug. This insect has a habit of dropping to the ground when disturbed; therefore, the best plan to get rid of it is to spread a cloth below the plants and gently shake them, then gather up and crush the insects that have fallen.

The treatment required at hill stations is similar as recommended for the plains. Imported seed only should, however, be used, as acclimatised stock seldom gives good results in the hills. The seeds should be sown in spring or in autumn in a warm, sunny situation. When the weather is severe, autumn sowings should be protected with matting or dry grass, but protection must not be overdone, or the plants will be weak and leggy when the season for planting arrives. In the lower elevations early autumn sowings only should be made.

Celery

APIUM GRAVEOLENS

VERNACULAR NAMES :—SHALARI, KURASS.

Plains.—Sow from middle of August to end of October.

Hills.—Sow from end of February to end of April. May also be sown in the autumn if protection can be afforded.

THIS is a hardy biennial, a native of Britain and of the North-West Himalaya. It is cultivated for the long fleshy stalks possessed by its leaves, these, when blanched to a crisp and tender condition, form a most wholesome and agreeable salad, and in a green state, a most useful flavouring medium.

There are two kinds of celery; the red and white-stalked, of both of which many sub-varieties are named in lists. Some growers recommend the red, and others the white, but the best varieties of both when well grown

and properly blanched, are equally satisfactory when they appear at the table.

Celery ripens its seed in this country, but the produce of acclimatised stock is a degenerate, weedy looking plant only fit for flavouring purposes. In order to have good heads, imported seed should, therefore, be sown.

Early sowings should be made in pots or boxes and sheltered from the sun and heavy rain in a well lighted verandah. When the young plants are a few weeks old, the pots or boxes should be gradually exposed to full sun, and the plants, when thoroughly hardened, transplanted from these to a nursery bed made up in an open situation, in lines 3 inches apart and the same distance from plant to plant. When the young plants have attained a height of 4 or 5 inches, they are then ready for being placed out in their permanent quarters. Late sowings or sowings made after the rains are over may be made broadcast in seed-beds, and transplanted direct from these to their permanent quarters. When the weather is hot the seeds often take a fortnight to germinate, but when it has cooled down somewhat, the young plants usually appear in the course of a few days.

Celery thrives best in a rich, friable, and well drained loam. The ground should be prepared by digging trenches 18 inches wide, 12 inches deep, and 4 feet apart from centre to centre. If the soil at the bottom of the trench is found to be stiff and clayey or of poor quality, it should be removed to the depth of another foot, and replaced with more friable and richer material from the surface. A plentiful supply of well decomposed manure should be introduced into the trenches and thoroughly incorporated with the soil. Any kind of rich manure will answer, but a mixture of decomposed cowdung and bazar refuse is perhaps the best. After the trenches have been prepared as above described, the plants should be inserted in single rows down the centre at 9 inches apart, and allowed to grow on for some time in a natural manner. During the early

stages, water should be freely given, the surface soil frequently stirred and loosened, and all lateral shoots removed as they appear. When the plants are about one foot high or nearly full grown, remove all the short outer leaves they possessed at the time of planting, draw the remainder closely together with the hand, and bring a few inches of earth up to their base, and repeat the process at intervals of a week until nothing but the leafy tops are visible. Care should, however, be taken not to earth up too high, and thus bury the plants. When the operation of earthing up is fully completed, the soil should be not much above the middle of the leaves or crown of the plants.

After-cultivation is confined to irrigating the spaces between the rows about once a fortnight, and keeping the ground free of rank weeds. Celery should never be allowed to suffer from want of water.

The heads are generally sufficiently blanched for use within a fortnight after the last earthing up has been given.

The treatment required at hill stations is exactly the same as has been detailed for the plains, but substituting the spring for the autumn months as the season for sowing; unless protection can be given, when the seed may be sown in boxes in cold frames. A mistake frequently made is to earth up as soon as the long leaves begin to develop; this not only checks the growth and renders the plants weakly, but makes the Celery tough, stringy, and almost unfit for the table.

Celeriac.

APIUM GRAVEOLENS, VAR. RAPACEUM.

Plains.—Sow from middle of August to end of October.

Hills.—Sow from end of February to end of May, and in autumn.

THIS is a form of the common celery with a round, turnip rooted stem. Its leaves are used for flavouring

purposes, and the stem as an ingredient in salads, or cooked. It attains to a fair size in this country, but the stems are not quite so crisp and tender as those grown in a cool climate. Where good heads of the common variety of celery can be easily raised, the cultivation of this form serves no useful purpose.

The seeds should be sown at the same time and in the same manner as recommended for common celery; but after-cultivation should be in beds instead of in trenches. The beds may be made from 6 to 8 feet wide, of any length which can be readily irrigated, and the plants when of some size placed out in rows 12 inches apart and the same distance from plant to plant. All further attention consists primarily of the usual routine of weeding and watering when necessary.

At hill stations sowing should be made in spring instead of in autumn, unless protection can be afforded, but all after-cultivation is the same.

Chervil, Garden.

ANTHRISCUS CEREFOLIUM.

Plains.—Sow from latter end of September to middle of February.

Hills.—Sow from end of February to end of August.

THIS is a hardy annual, a native of various parts of Europe. The leaves, when young, are used as an ingredient in salads, and for flavouring purposes. It succeeds without any trouble in this country, but as the leaves are not in much demand in English cookery, the plant is seldom met with.

As the leaves can only be made use of when young, sowings should be made every fortnight to maintain a constant succession. The seeds should be sown broadcast in small beds, or in shallow drills drawn at 8 inches apart from the latter end of September and throughout the cold season months. All after-cultivation simply

consists in weeding when needed, and watering once a week during dry weather.

At hill stations, sowings may be made from the end of February and throughout the summer months. As a large supply of leaf is seldom necessary, sufficient for all requirements could usually be afforded from a few pots or boxes.

Chervil, Bulbous-rooted.

CHAEROPHYLLUM BULBOSUM.

Plains.—Sow in October.

Hills.—Sow from end of February to end of April.

THIS is a hardy biennial, a native of the Continent of Europe. It possesses a fleshy tapering root, resembling that of a parsnip. When it is cooked, the flesh is yellowish-white, slightly farinaceous, and in taste somewhat suggestive of a sweet-potato flavoured with the common garden chervil. This plant is seldom grown in this country, but can be raised with little trouble.

The seeds should be sown in shallow drills drawn at one foot apart in any good garden soil during the month of October. When the young plants are a few inches high, they should be thinned out to 6 inches apart. After-cultivation simply consists in weeding and watering when necessary. The roots are usually in fit condition to use by the end of February or early in March.

At hill stations, the seeds should be sown in spring instead of in autumn, but otherwise the treatment is the same as in the plains.

Chicory.

CICHORIUM INTYBUS.

VERNACULAR NAME :—KASNI.

Plains.—Sow from middle of September to end of October.

Hills.—Sow from middle of March to end of May.

THIS is a hardy perennial, a native of Europe, and of various parts of Asia. The leaves, when quite young, are sometimes used as a pot herb, and when blanched as a salad; the root, when dried, roasted and pounded for admixture with coffee. The plant is also said to be an excellent fodder for cattle, but I have never seen it grown anywhere for this purpose. In Northern India it is occasionally cultivated by the natives for its leaves, and used after the manner of spinach, but more often it is simply grown for medicinal purposes. The fresh leaves and root when pounded are frequently prescribed by native practitioners as a stimulant for cases of sluggish liver, and also as a remedy in congestion of that organ.

The seeds should be sown in shallow drills drawn at one foot apart in any fairly rich, deeply worked soil from the middle of September to the end of October. When the plants are intended to be blanched for salads, they should be thinned out to 15 inches apart, but when required as a pot herb for medicinal purposes, or for the root, 8 inches apart is a sufficient distance to allow. All after-cultivation consists of the usual routine of weeding and watering as necessary.

When grown for salads, blanching may be accomplished after the plants have attained some size, by covering them over with inverted flower pots for a period of ten or fifteen days.

At hill stations, sowings should be made in spring instead of in autumn, but otherwise the treatment is the same as detailed for the plains.

Chives.

ALLIUM SCHŒNOPRASUM.

Plains.—Sow in October or November.

Hills.—Sow from beginning of March to end of May.

THIS is a hardy perennial, a native of Britain, and is cultivated for the leaves. The latter when cut over close to the ground are used in salads and soups instead of young onions. Firminger says "it is little known in India," which remark is as applicable to the present as to the time he wrote.

The plant is usually propagated by dividing the roots in autumn, but owing to its rarity a stock must first be secured by raising it from seed. The latter is only obtainable from a few of the large seed firms in Europe, and being comparatively high in price, I look upon the return the plant gives as not at all commensurate with the trouble and expense its cultivation incurs.

The seeds should be sown in pots filled with a somewhat light soil during October or November, and the plants allowed to grow on in these until they have formed a dense mass. After a time, or say about six weeks from date of sowing, the contents of each pot should be broken up into a dozen pieces, and planted out in beds at 6 inches apart, and in rows from 9 to 12 inches asunder. After-cultivation consists of the usual routine of occasionally stirring the soil between the plants, and weeding and watering as necessary.

At hill stations, sowings should be made during the spring months. After a stock has once been secured, it can be kept up afterwards by simple division of the roots every autumn or spring.

Coriander.

CORIANDRUM SATIVUM.

VERNACULAR NAMES:—*The Plant*, KATHAMIRA. *The Seed*, DHANYA.

Plains.—Sow from beginning of October to end of November.

Hills.—Sow from middle of March to end of May.

THIS is an annual, a native of the South of Europe, and found in a cultivated state all over India. The leaves, when quite young, form an ingredient in salads, and for flavouring soups ; while the seeds are extensively employed in confectionery, medicine, and also as a spice.

It succeeds in almost all soils, and may be sown broadcast, or in shallow drills made at one foot apart from the beginning of October up to the middle of November. When grown for the seed, the plants should be thinned out to one foot apart, but when grown for the leaf, no thinning requires to be done. All after-cultivation merely consists in weeding and watering as necessary.

At hill stations, sowings should be made during the spring months when cultivated for the seed, but when grown for the leaf only, these may be made at any time during the spring or summer months

Corn Salad.

VALERIANELLA OLITORIA.

Plains.—Sow from beginning of October to end of November.

Hills.—Sow from middle of March to end of June, and in autumn.

A SOFT, succulent annual, a native of Europe. It s popular on the Continent of Europe, particularly in France, as a salad, but it is not much used in English cookery.

It succeeds without any trouble in this country as a cold season annual, and may be sown in pots any time after the beginning of October up to the end of November. When the plants are sufficiently advanced to handle, they should be placed out in the ground in any good garden soil, in rows 9 inches apart, and 6 inches from plant to plant. All after-cultivation is

confined to the usual routine of weeding and watering as necessary.

At hill stations, sowings may be made during the spring and early summer months, and again in autumn after the rains are over. Autumn sowings, when successful, will furnish material for an occasional salad throughout the whole winter.

Cress, Garden.

LEPIDIUM SATIVUM.

VERNACULAR NAME :—HALIM.

Plains.—Sow from beginning of September to end of February.

Hills.—Sow from beginning of March to end of September.

A HARDY annual, supposed to be a native of Persia, but common as a cultivated plant all over India. The leaves, when quite young, are used as an ingredient in salads, and when more advanced as a garnish.

When grown for salads, sowings should be made about once a week in shallow pans, or broadcast in beds, throughout the cold season months. The seeds should be lightly covered, the soil kept moist, and shaded from the sun. The plants are generally fit to cut over for use within a few days after sowing.

When grown as a garnish or for seed, sowings should be made in an open situation not later than the middle of November, in any good soil in drills made at one foot apart, and the plants thinned out to 4 inches asunder. All after-culture is confined to weeding whenever necessary, and watering about once a week during dry weather.

At hill stations, sowings may be made from the middle of March up to the end of September. During the dry

months, these may be made in the open ground, but in the wet months, pans or boxes should be used and sheltered under a verandah or shed.

Cress, Water.

NASTURTIUM OFFICINALE.

Plains.—Sow during October or in November.

Hills.—Sow from end of February to end of June.

THIS is a hardy perennial, a native of Britain, where it is found growing in ditches, and in the beds of small streams. It is also found wild in similar positions in the North-West Himalaya, but generally in the neighbourhood of hill stations or near villages, to where it, in all probability, escaped from gardens. The leaves form a favourite salad, and are also said to possess antiscorbutic properties.

When conditions can be produced resembling those under which the plant is found in a natural state, it can be cultivated with success in this country. These may be imitated in various ways, but one of the simplest and most effective plans for growing the plant is as follows :—

Prepare a bed at one side of the main channel leading from the well from which all water for irrigating the garden is drawn. Great care should be taken that the bed is not made in a position likely to, at any time, suffer from contamination or pollution. The soil should be light and porous, and well enriched with some old decomposed leaf-mould ; when it is stiff and clayey, some sharp river sand should be added to it. When finished off, the surface of the bed should be slightly below the level of the channel, when the latter is full of water and should gently slope in the same direction as the course of the latter. An opening should pass from the channel to the bed at the corner nearest to the well for inflow of water, and a similar opening at the corresponding corner further down for the outflow.

Plantation may be made by raising the plants from seed, or by breaking up old plants and planting the pieces during October or November. When raised from seed, the latter should be sown broadcast, and lightly covered with fine soil. Water should be allowed to flow over the bed immediately after sowing, and continued daily, but more should not be given than is necessary to keep the soil in a saturated condition until the plants are of some size. When the latter have made a few secondary leaves, the supply of water should be gradually increased until the plants are able to bear 1½ to 2 inches of water, without appearing over-submerged. When the plants are in an advanced stage, the openings from the water channel should be kept constantly open, and a fresh supply of water allowed to flow through the bed whenever the well is at work, and also for at least half an hour daily when water is not being drawn for other purposes. Water cress never thrives when the water is stagnant, therefore, a fresh flow through the bed should be maintained whenever possible.

When plantations are raised by breaking up old plant the pieces should be planted at 4 inches apart in rows running parallel with the course of the water, and a full supply of the latter maintained from the beginning. As the plants are apt to be washed out of position before securing a hold of the ground, they should be pinned down with some small hooked twigs of bamboo, or weighted down with pieces of brick or stone.

The treatment required at hill stations is the same as detailed for the plains, but as wells do not usually exist there, a natural stream must be made use of for growing the plant. Avoid polluted streams.

Dill.

PEUCEDANUM GRAVEOLENS.

VERNACULAR NAME :—SOWA.

Plains.—Sow from beginning of October to end of November.

Hills.—Sow from middle of March to end of May.

This is a biennial, a native of Southern Europe, but in this country it attains maturity within a few months from date of sowing, and thus assumes an annual habit. The leaves are used in soups, sauces, and as a garnish, and the seeds yield a principle, considered useful in relieving spasmodic affections of the bowels.

The plant thrives in any soil, and is of easy culture. The seeds should be sown in shallow drills made at one foot apart during October and November, and the young plants, when a few inches high, thinned out to a distance of 9 inches asunder.

All after-cultivation is confined to weeding and watering as necessary.

At hill stations, the treatment is the same as detailed for the plains, only substituting the spring for the autumn months as the season of sowing.

Endive.

CICHORIUM ENDIVIA.

VERNACULAR NAME:—VILAIYTI KASNI.

Plains.—Sow from middle of October to end of November.

Hills.—Sow from middle of March to end of May and in autumn.

This is a hardy annual, supposed to be a native of the Northern Provinces of China, and is cultivated for the stocky head of leaves which it possesses. These, when blanched to a crisp tender condition, are used as a salad, and sometimes as an ingredient in other culinary preparations. There are two classes of endive, *viz.*, curled-leaved and broad-leaved, and numerous sub-varieties of both.

Endive is of easy culture and acclimatises readily, little difference being discernible between the progeny of imported and acclimatised seed.

The seeds may be sown broadcast in nursery beds and lightly covered with fine soil, from the middle of October to the end of November. When the weather is dry water should be given daily from a fine-rosed watering pot, and a little shade afforded for a few hours in the middle of the day until the young plants are well above ground when it may be entirely withdrawn. When the plants have made three or four secondary leaves, they should be taken up and replanted in moderately rich soil in rows one foot apart, and the same distance from plant to plant. Water should be given immediately after planting, and repeated about once a week in all but wet weather, and the soil stirred and loosened as frequ ntly as possible.

When the plants have nearly attained full size blanching may be commenced on those most advanced. This operation may be performed in various ways. Some writers recommend drawing the leaves together, tying them up, and covering over with a mat or some dry grass, while others recommend covering over with an inverted flower pot. As a perfect head of endive should have the points of its outer leaves tipped with green, the inverted flower pot generally produces too white a head; the first described method is therefore the most preferable of the two.

There is a saucer-shaped earthenware vessel found in all bazars under the name of *rakabi* or *sainak*, much used by the lower castes as a food-dish, which answers admirably for blanching endive. If a large size of it is obtained, and placed over the plants in an inverted position on small pieces of brick, the blanching is performed to perfection. The leaves should first be carefully flattened out with the hand, and the brick rests so adjusted as to allow of rather less than an inch of space between the edges of the vessels and the ground. From ten to fifteen days is the time usually required to effect blanching.

The mode of cultivation at hill stations is the same as detailed for the plains. Sowing may be made during

the spring and early summer months, and again in autumn as soon as the rains are over. Endive is much hardier than lettuce, it is, therefore, a useful winter salad in the hills.

Fennel.

FOENICULUM VULGARE.

VERNACULAR NAMES :—SAUNF, BARI-SAUNF.

Plains.—Sow from beginning of October to end of November.

Hills.—Sow from beginning of March to end of May.

THIS is a hardy perennial, and is found in a wild or semi-wild state over the most of Europe and in various parts of Asia. In this country it is a common garden plant, and is also cultivated as a field crop for its seed in some parts of the Bombay Presidency. The leaves are used in fish sauces, and the stalks as an ingredient in salads ; they also furnish a good garnishing material.

The seeds may be sown in any good soil, in shallow drills made at 18 inches apart, from the beginning of October to the end of November, and the plants, when 3 or 4 inches high, thinned out to one foot apart. Beyond an occasional weeding, and giving a supply of water once a week in dry weather, no further culture is required.

The treatment required at hill stations is exactly the same as detailed for the plains, only substituting the spring and early summer months as the season of sowing.

Garlic.

ALLIUM SATIVUM.

VERNACULAR NAME :—Lasun.

Plains.—Plant during October or November.

Hills.—Plant in February or March.

THIS is a hardy bulbous-rooted perennial, naturalised in Sicily and South of France, but only found in a truly wild condition in Central Asia. The bulbs are compound, being composed of several smaller bulbs called cloves, and in flavour suggestive of something between asafœtida and the onion. In this country, they are largely used in native cookery, and for flavouring chutnies, curries, etc., but in purely English cookery are not much used, owing to their strong flavour, and to the disagreeable odour they impart to the breath.

The plant is usually raised by planting the bulbils or cloves, in any good soil in drills made at 9 inches apart, and 6 inches asunder, during October or November.

After-cultivation simply consists in keeping the ground free of rank weeds, and watering about once a fortnight when the weather is dry. At the commencement of the hot season, the leaves turn yellow and eventually die down; when this has occurred, the crop is then ready for being dug up and dried for future use.

At hill stations, the treatment is exactly the same as detailed for the plains, only planting the cloves in spring instead of in the autumn.

Ground Nut.

ARACHIS HYPOGŒA.

VERNACULAR NAME:—MUNGPHALI.

Plains.—Sow in August and September.

Hills.—Grown only in the lower hills, not above 4,000 feet altitude.

A SOUTH American annual belonging to the natural order Leguminoseæ, grown extensively in Southern India, Bengal, Bombay, and now becoming popular in Upper India. The nuts are eaten either raw, roasted in the shell, or taken from the shell and fried in butter.

The seeds yield on expression an oil resembling olive oil. The plant needs very little care as regards cultivation, provided the ground is kept free from weeds in the early stages. A rich, sandy, well-drained soil favours its growth; the seeds or nuts may be sown shelled about two feet apart, burying them to a depth of two or three inches. The crop is benefited by occasional light forkings to loosen the soil. Water freely during growth, but entirely withhold when the plants begin to assume a yellowish hue. As soon as the nuts have filled the shells, the crop may be harvested in a similar manner to potatoes and thoroughly dried in the sun before storing.

Horse-radish.

COCHLEARIA ARMORACEA.

Plains.—Not generally grown.

Hills.—Plant the roots during the spring or autumn months.

A HARDY perennial, a native of the temperate parts of Eastern Europe, and is cultivated for its long fleshy roots. The latter, when scraped into shreds or grated are served up as a salad, or used for flavouring soups. A cool climate and a damp heavy soil seem essential for success in the cultivation of this plant; it is therefore a short-lived plant on the plains, but thrives well at hill stations.

An excellent substitute is, however, found for it in the plains in the roots of young trees of *sonjna* (*Moringa pterygosperma*). If the root of this tree is prepared, and served up in the same fashion as the root of the true horse-radish plant, the former is not distinguishable from the latter, either in appearance or flavour. The tree is easily raised from seed, while the latter is obtainable from most of the Government or Horticultural gardens throughout the country. If sown in March

or April, the roots will be large enough to use by the following autumn.

The true horse-radish plant can be grown with success at hill stations. It is usually propagated by cutting the root into pieces about an inch long, and planting these at a foot apart in a deep, rich, and rather moist soil, any time during the spring or autumn months. As the seed is seldom mentioned in the lists of European seedsmen, a beginning has always to be made by root propagation. When the latter are not locally obtainable, they should be procured from hill gardens, any time during the cold weather months. The plant being perennial, a plantation, when once established, need never be allowed to die out. If a few plants are always reserved for propagating purposes, it may, therefore, be renewed from time to time as required.

Knol Khol or Khol Rabi.

(BRASSICA OLERACEA, VAR. CAULO-RAPA.)

VERNACULAR NAME :—GANT-GOBI.

Plains.—Sow from the middle of August to the end of October.

Hills.—Sow from latter end of February to the end of May.

Lower Hills.—Sow in September.

THIS is a form of cabbage with a turnip-rooted stem, and used for the same purposes as the last named esculent. It is not a favourite vegetable in England, but is esteemed on the Continent, especially in Germany. In this country it thrives with ordinary attention, and on the whole is somewhat of a favourite with the Indian gardener. There are several varieties, but the following two kinds are those most generally grown: Early White and Early Purple.

The seeds should be sown broadcast in beds from the middle of August to the end of October, and the young plants, when 3 or 4 inches high, planted out in rich friable soil, in rows 15 inches apart, and 9 inches from plant to plant. The fleshy stems are in best condition for the table when between the size of a tennis ball and a medium-sized turnip; when larger, they become woody, and only fit for cattle. In order to have a succession of succulent stems for the table, sowings at intervals of a fortnight should, therefore, be made. The treatment required by this vegetable is exactly the same as has already been fully explained in the cultivation of Brussels sprouts, cabbage and cauliflower. For further instructions, reference should, therefore, be made to the details given under these heads.

At hill stations, the treatment required is the same as in the plains, only substituting the spring for the autumn as the season of sowing. For gardens below 5,000 feet altitude autumn sowings are recommended; if sown in the spring, they suffer badly from the attacks of insects.

Lavender.

(LAVENDULA VERA.)

Plains.—Sow during October.

Hills.—Sow from middle of March to end of May, and during September or October with protection.

A PERENNIAL shrub, native of the South of Europe. It is generally cultivated for its flowers from which a perfume is made, and for its aromatic leaves. The latter are occasionally used as an ingredient in seasonings, and as the plant rarely flowers in the plains, this is about the only use which can be made of it. If young established plants can be obtained from the hills during October and planted in pots or well drained positions they will flower successfully in the plains.

This plant can be propagated by cuttings made at any time during the cold-weather months, or by seeds sown during October. When raised from seeds, the latter should be sown in pots or boxes filled with a light-ish soil. When the young plants are large enough to handle, they should be transplanted from the seed pot or box, singly, into small-sized pots, and again transferred from the latter to pots of a larger size as needed. When a year old, the plants may be planted in the ground in an open, well-drained spot. If the soil is light and porous, the plants will live for years in the ground, but if stiff and heavy, they usually perish during the first rainy season.

At hill stations cuttings and sowings should both be made during the spring months. As this shrub lives for years in temperate climates, it will require little or no attention in the hills when once established.

Leek.

ALLIUM PORRUM.

VERNACULAR NAMES :—KIRATH ; KIRAS, VILAIYTI-PIAZ.

Plains.—Sow from middle of September to end of October.

Hills.—Sow from beginning of March to end of May, and during the autumn if protection can be afforded.

A HARDY biennial, which is supposed to be a native of Switzerland. It is cultivated for the fleshy stem, which, when blanched, forms an esteemed flavouring ingredient in soups and stews. It succeeds fairly well in this country, often remaining in good condition for use until near the close of the rainy season, but seldom attaining to so large a size as met with in Europe. There are numerous varieties in cultivation.

The seeds should be sown broadcast in beds made up in an open situation, and covered over with an eighth of an inch of fine soil, from the middle of September to the end of October. When the young plants are 4 or 5 inches high, they should be planted in rich soil, laid out in narrow shallow trenches. The latter should be made 4 inches wide, 6 inches deep, 15 inches apart, and the plants inserted down the middle of the trench at 6 inches asunder. For a month or two after planting, the plants should be allowed to grow on in a natural manner, but afterwards, or when well advanced, a little earth should be drawn into the trenches, and the operation repeated at each weeding until the latter are quite filled up. When this has been accomplished, nothing further requires to be done beyond weeding when needed, and watering once a week when the weather is dry. The fleshy stems are usually in fit condition to use a few weeks after the last earthing up has been given.

At hill stations, the treatment required is the same as detailed for the plains, only substituting the spring for the autumn as the season of sowing, except where sown with protection.

Lettuce.

LACTUCA SATIVA.

VERNACULAR NAMES :—KAHU ; SALAD.

Plains.—Sow from middle of August to end of November.

Hills.—Sow from January to August.

THIS is a succulent annual, supposed to have originated from Lactuca Scariola, a wild form of lettuce found in the Western Hima'aya. It is grown for the stocky head of leaves which it possesses. The latter, when crisp and tender, are universally considered to form the best salad material we have. There are two distinct classes in cultivation, respectively termed Cabbage and Cos lettuce, and numerous sub-varieties

of both. The first named class have a globular head formed of broad, rounded leaves, while the second have an oblong or conical head, formed of narrower and somewhat pointed leaves.

Lettuce should be grown in an open situation in a rich, heavily-manured soil, and plentifully supplied with water when the weather is dry. It acclimatises readily, but seed should not be gathered from plants of sowings made before the middle of October. The best developed plants of sowings made between the middle and end of that month produce the most reliable seeds. When highly cultivated and carefully selected, acclimatised stock will yield satisfactory results over a long series of years without showing any degeneration.

Early sowings, or those made from the middle of August up to the first or second week of October, as a rule, only make a few leaves before shooting into flower. For early use, small successional sowings should, therefore, be made broadcast in beds, and the plants, when well above ground, thinned out to 4 inches apart, and cut for use before showing any inclination to flower.

Later, or main sowings, may also be made broadcast in beds, but instead of thinning out and allowing the remaining plants to grow on, they should be transplanted to rich ground, in rows 15 inches apart, and 12 inches from plant to plant. After attention primarily consists in keeping the ground free of weeds, and watering every third or fourth day when the weather is dry.

When the plants are well advanced, the most forward may be assisted to form heart by drawing the leaves together and tying them loosely with fibre or a light class of string. When the soil and strain of seed is good, and cultivation fully attended to, the operation of tying up the heads is, however, seldom required by the plants of October and November sowings.

At hill stations, sowings may be made any time during the spring and early summer months, and the plants either allowed to grow on where sown after being thinned out, or planted in rows in the open ground. Either system will answer, but on the whole it is preferable to follow the second plan.

Sowings may also be made in the rains, but these should be in boxes placed under the shelter of a well-lighted verandah.

Marigold Pot.

CALENDULA OFFICINALIS.

VERNACULAR NAMES :—GUL-I-ASHARAFI, ZERGUL.

Plains.—Sow during October.

Hills.—Sow from beginning of March to middle of June.

THIS is an annual, a native of the South of Europe. Its flowers are used in Europe for flavouring soups, but in this country they do not seem to be in much request. The plant is, however, common in Indian gardens grown ornamentally as a cold-weather flowering annual.

The seeds may be sown in pots, or broadcast in beds, during October, and the young plants, when large enough to handle, planted out in any good soil, in rows 15 inches apart, and 12 inches asunder. All after-treatment is simply confined to weeding when needed, and watering once a week when the weather is dry.

At hill stations, the treatment required is the same as detailed for the plains, only substituting the spring for the autumn as the season of sowing.

Marjoram.

COMMON MARJORAM. ORIGANUM VULGARE

POT MARJORAM. ORIGANUM ONITES.

SWEET MARJORAM. ORIGANUM MARJORANA.

WINTER SWEET MARJORAM. ORIGANUM HERACLEOTICUM.

VERNACULAR NAMES :—MARRA, BANTULSI.

Plains.—Sow during October.

Hills.—Sow from March to middle of June.

THESE are biennial or perennial herbs, natives of various parts of Europe, and are grown for their aromatic leaves which are used either fresh, or in a dry state, for seasoning and flavouring purposes.

They may all be raised from seed sown in pots during October. The young plants, when large enough to handle, should be taken from the seed pots and planted in the ground in any good, well-drained soil, in rows 12 inches apart, and 9 inches from plant to plant, or they may be again transferred to pots, allowing five seedlings to a 12-inch pot, and grown on in these. They live on year after year both in pots and in the ground if the drainage is good, but on the whole, it is the better plan to raise a fresh stock annually from seed.

When it is desired to dry the leaves, the tops should be cut when the plants are coming into flower, dried in the shade, and bottled for future use.

At hill stations, sowings may be made during the spring or early summer months. As the plants do not become exhausted from the effects of climate at high elevations so quickly as is the case in the plains, a stock, when once secured, may be renewed as necessary, by taking cuttings from old plants or by breaking

the latter up, and planting the pieces in fresh soil. Cuttings may be made in the rains, and division effected during the spring months before the plants commence growing.

Mint.

SPEARMINT. MENTHA VIRIDIS.

PEPPERMINT. MENTHA PIPERITA.

PENNYROYAL. MENTHA PULEGIUM.

VERNACULAR NAME :—PODINA.

Plains.—Sow or plant in October.

Hills.—Sow or plant during the spring months.

THESE are dwarf herbaceous perennials, natives of most temperate parts of the world. They are cultivated for various purposes, but in gardens are generally grown for the leaves for use as a flavouring ingredient in various culinary preparations.

Propagation of the various kinds of mints is usually effected by breaking up old plants in autumn, and planting the pieces in rows one foot apart, and 6 inches from plant to plant, but when a stock of roots is not locally obtainable, they may also be raised from seed sown during October. The soil should be rich and somewhat heavy, and the situation a shady one. After-attention is confined to the usual routine of weeding when needed, and watering once or twice a week when the weather is dry.

Mints will sometimes continue to thrive in the same spot for a series of years, but they will have more vigour if taken up annually in October, and replanted in new

ground, or even in their former situation if the ground is liberally manured with some decomposed cowdung before being replanted.

At hill stations, sowing or planting should be done during the spring months, but otherwise the treatment required is the same as has been detailed for the plains.

Mushroom.

AGARICUS CAMPESTRIS.

Plains.—Plant the spawn from July to March.

Hills.—Plant the spawn from March to October.

THIS is the most esteemed of the edible Fungi, and of the whole family, the one most adapted to production under artificial conditions. In cool climates, little difficulty is experienced in raising mushrooms all the year round in close sheds or in underground cellars in a temperature maintained at an even genial figure, but in Northern India, with its wide range of temperature, the same even conditions are not so easily reproduced.

The common mushroom occasionally appears spontaneously during the rainy season in the grounds of the Government Remount Depôt at Saharanpur, but when its cultivation is attempted during the same season, failure is the most common resu t of such attempts. The then prevailing temperature, although not too high in some seasons for spontaneous growth in an open pasture, is too high apparently for production under artificial conditions of treatment. The most suitable time for cultivation in Northern India is probably from August to March in the plains, and from March to October in the hills. Very little is, however, known in India regarding the cultivation of mushrooms either by professional or amateur gardeners, and although I have indicated a stated period as the most

likely one for culture, I am not prepared to say that with care and management success might not be met with at most seasons of the year.

In cultivating mushrooms, the first thing to be considered is a suitable place in which to grow them. Instances are recorded of successful results having been attained in the open air in India, but on the whole it is safest to carry on cultivation under cover. A cool, closed shed or out-house, or a vacant room in a disused building, with only sufficient openings to admit of a little air and subdued light, represent the most suitable cover that can be described in which to grow them.

The next matter for consideration is the preparation of the bed. The most essential material in its composition is horse-droppings, free from grass, straw and similar foreign matter, preference being given to those collected from well-nourished animals. The droppings should be collected daily, and kept under cover of a shed or out-house, spread thinly over the floor to prevent premature fermentation. When sufficient has been collected to form a bed, 3 feet broad, 3 feet deep, and any length from 6 feet upwards, formation may then be commenced.

To secure perfect drainage, the foundation of the bed should consist of a layer of broken bricks or potsherds 3 inches deep. A layer of droppings 10 inches deep, tramped firmly down, should then follow, next a layer of earth 2 inches deep, composed of two parts good friable garden soil, one part decomposed cowdung, and one part decomposed sheep or goat dung; then a second layer of droppings of the same depth as the first, tramped firmly down as before and covered with the mixture of soil as before, and, finally, a third 10-inch layer of droppings, also tramped firmly down and its covering of earth, but the latter need only be an inch deep, and should not be added until after the first most violent fermentation action has passed.

A second plan of forming beds is to mix the horse-droppings with decomposed cow-dung, good garden soil, and sheep or goat dung. The last three ingredients should be in equal proportions, and when mixed together should be equal to one-fifth of the bulk of the droppings. The whole should then be well mixed, and laid over the foundation of broken bricks or pots-herds to a depth of from 2½ to 3 feet, pressing firmly down, and finishing off with an inch of good soil as a covering, after active fermentation has ceased.

Should the droppings have become too dry before sufficient has been collected, they may be moistened with water before being formed into a bed to the same degree as when freshly deposited.

After a bed has been formed, it should be allowed to ferment for 12 or 15 days, and when the temperature has cooled down to 90° or 85° Fahr., it is then ready to receive spawn, and its upper covering of earth. The temperature may be taken by driving a hole perpendicularly through the centre of the bed, large enough to admit of a thermometer.

There are two kinds of spawn imported into this country, English and French. The former is contained in hard solid bricks, formed of dried cow and horse dung, while the latter is contained in half decomposed loose stable litter. If English spawn is used, it should be broken in pieces two inches square, and inserted in the fermenting material of the bed an inch deep, and at 6 inches apart; when French spawn is used, it should be broken in pieces an inch thick, 3 or 4 inches square, and also inserted an inch deep in the bed, but at 15 inches apart. After insertion of the spawn, the bed should be finished off with its final coating of earth, and the latter kept dryish for a time. If the spawn is good, it will show activity in 8 or 10 days, and in the course of 15 or 20 days later, it should have taken possession of the whole bed. It is, however, advisable to examine the bed every few days, and replace such spawn

as might not thrive, which can be seen by the absence of white filaments in the surrounding material. If culture is carried on in a close room, nothing further requires to be done but to wait for the appearance of the crop,* which may occur at any time from six weeks to two and a half months from date of spawning; if, however, the bed is placed in the open, or in a structure not free from draughts of cold air, it must be covered with straw loosely thrown over to keep a uniform temperature all round it. After the mushrooms begin to appear or even before they begin to appear, should the soil on the surface of the bed have become very dry, water should be given from a watering pot with a fine rose two or three times a week. Always use lukewarm water.

When beds first begin bearing, the crop is generally very prolific, but in course of time the quantity produced will naturally fall off. When this is seen to be the case, the bed can be stimulated into renewed vigour by applying liquid manure twice a week made up as follows :—Take of fresh cowdung 10 seers, goat or sheep dung 3 seers, fowl manure ½ a seer, saltpetre 4 ounces, water 10 gallons, stir the whole together, allow the solids to settle, and water with the clear liquid.

In order to maintain a succession of mushrooms, it is advisable to possess several beds made up at intervals of about six weeks. By having beds in bearing, and beds in course of formation, in the one room, the heat given off in fermentation will be of great assistance in maintaining the temperature at an even genial figure. New beds can be spawned by taking material in handfuls from those already spawned, and inserting it in the manner detailed for planting the prepared spawn. The latter is something like leaven, and when once obtained, may be indefinitely multiplied.

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* A correspondent in Kathiawar has informed me that first crops of mushrooms appeared in a bed spawned with French spawn 5 months after date of spawning.

Mustard, Garden.

BRASSICA ALBA.

VERNACULAR NAMES :—RAI, SAFED-RAI.

Plains.—Sow all the year round.

Hills.—Sow from March to September.

THIS is a hardy annual, a native of Southern Europe and of Western Asia, and is grown in gardens as a small salad, and used much in the same way as cress.

When grown for salads, the seeds may be sown in succession, at almost all seasons of the year, in boxes, or broadcast in beds, and the young plants cut over for use when an inch or two high. When grown for seed, the latter may be sown in any good soil in lines made at 2 feet apart, during the month of October, and the plants thinned out to a foot asunder. This plant is of easy culture and requires little after-attention, but it may be weeded occasionally, and watered about once a week when the weather is dry.

At hill stations, sowings may be made in the open during the dry months of the spring and summer, but in the rains they should be under cover of a verandah or shed.

Nigella or Simla Fennel.

NIGELLA SATIVA.

VERNACULAR NAMES :—KOLONJI, KALAJIRA.

Plains.—Sow from beginning of October to middle of November.

Hills.—Sow from beginning of April to end of May.

THIS is an annual, a native of Egypt and of Southern Europe, but has been cultivated in India from a remote period for its aromatic seeds, which are much used in

native medicine, and for flavouring curries and similar dishes.

The seeds may be sown in any good soil, in shallow drills at one foot apart, from the beginning of October to the middle of November, and the plants, when an inch or two high, thinned out to 6 inches asunder. After-attention simply consists of the usual routine of weeding as required, and watering once a week when the weather is dry.

At hill stations, sowings should be made in a warm, sunny situation, in the same manner as detailed for the plains any time during April or May.

Onion.

ALLIUM CEPA.

VERNACULAR NAMES :—PIYAZ, PIYAJ.

Plains.—Sow from middle of October to the middle of November.

Hills.—Sow from beginning of March to end of May; also during the autumn.

THIS is a hardy biennial, supposed to be a native of Africa, but found in a cultivated condition over most of the known world. There are many varieties in existence, but as the seed does not keep for any length of time that which is imported from Europe frequently fails to germinate. I would therefore advise growers to confine themselves to the acclimatised kinds found in the country. There are two excellent varieties of such, termed Silver-Skin or Patna Onion, and the Common or Large Red Onion. The bulbs of both are mild and of good flavour, and both attain a large size under favourable treatment.

The onion requires an open situation, and a rich, friable, well-manured soil, but as the rootlets do not penetrate to any great depth it need not be deeply

turned over. When preparing the ground, it should be overspread to a depth of 3 or 4 inches with decomposed manure of the farm-yard class, but if some wood or cowdung ashes and night-soil are also added, these will have a beneficial effect on the crop. The whole should be worked into a depth of 6 or 8 inches, and finished off by raking the surface fine, and arranging the ground in beds for irrigation.

The seeds may then be sown broadcast, or in drills made at a foot apart, and covered over with half or three-fourths of an inch of fine soil, from the middle of October to the middle of November, but from the middle to the end of the first named month is the best period within which to sow. When the young plants are a few weeks old, they should be thinned out to 4 or 5 inches apart. The thinnings may be transplanted to a vacant plot, or between other crops, and made use of in a green state during the course of the season. Onions, when transplanted before the middle of January, usually flower on the advent of hot weather; therefore, transplanted plants should not be depended on for the production of sound keeping bulbs. The market gardeners around Saharanpur transplant all their onions, but they sow during November, and do not begin to transplant until the middle of January. The plan appears to answer very well, but in my opinion sounder and better formed bulbs are produced by sowing *in situ* in October, and thinning out the crop as already recommended.

After-culture primarily consists in keeping the ground free of weeds, and watering once or twice a week when the weather is dry. Sometimes, when the bulbs are half formed, the leaves assume a yellowish unhealthy hue and cease growing. When this is noticed, it can be corrected by applying surface dressings of wood or cowdung ashes once or twice a week immediately before watering. About the beginning of the hot weather, the crop will be ready for lifting, which is known by the withering of the leaves. Water should then be

sparingly applied, and any plants which show no tendency to wither may be assisted to do so by bending over the leafy tops flat with the ground. When the leaves are completely withered, the bulbs may be taken up, and after being well dried in the sun, stored in a dry, airy place for future use.

When it is desired to raise seed, sound, firm, well-shaped bulbs should be selected, and planted in rows, in rich, well-manured soil, at 2 feet apart and 18 inches asunder, during the month of October. Before inserting the bulbs in the ground, their tops should be sliced off with a sharp knife, which operation will have the effect of stimulating a vigorous leaf growth, and much stronger flower shoots than if planted entire. The cut should be made well into the bulb; in fact, its upper third may be entirely cut away, leaving the root end and remaining two-thirds for planting.

At hill stations, cultural treatment is exactly the same as detailed for the plains, only substituting the spring for the autumn months as the season of sowing, excepting where autumn sown for early use.

Parsley.

PETROSELINUM SATIVUM.

VERNACULAR NAMES :—PITURSILLI, AJMUD.

Plains.—Sow from beginning of September to end of November.

Hills.—Sow from beginning of March to end of May or in autumn.

THIS is a hardy biennial, a native of Sardinia, and is grown for its leaves which are in great demand for garnishing, and of well-known use in numerous culinary preparations. *There are many varieties in cultivation.*

Parsley thrives in most kinds of soils, but prefers a rich and somewhat heavy one, and a partially shaded situation. The seeds may be sown in beds arranged for irrigation, in drills one inch deep, made at one foot apart, from the beginning of September to the end of November, and the plants thinned out to 2 or 3 inches asunder if they come up too closely together. When the weather is hot, the seeds will often lie for a fortnight in the ground before germinating, but when the cold season has fairly set in, the young plants usually appear above ground a few days after sowing. All after-attention consists of the usual routine of weeding when needed, and watering about once a week when the weather is dry.

At hill stations, sowing may be made during the spring and early summer months, and again in autumn immediately after the rains are over.

Parsnip.

PASTINACA SATIVA.

VERNACULAR NAMES:—JUZUR, ISTUFIN.

Plains.—Sow from middle of October to middle of November.

Hills.—Sow from beginning of March to end of May.

THIS is a hardy biennial, a native of Britain and some parts of Siberia, and is cultivated for its fleshy roots. The latter, when cooked, are a favourite vegetable with some, but not universally liked owing to their peculiar flavour. There are two types of parsnip, one with a long tapering root, and the other with a round or turnip-shaped root, but the former is the one most favoured by growers.

The seed of the parsnip only retains its vitality for a limited period of time, and seldom germinates in this country unless it belongs to the crop harvested in

Europe in August-September, and sown in this country in October-November of the same year. Vegetable seeds which arrive in this country any time before the end of September, and even for six weeks later, mostly belong to the crop harvested in Europe late in the summer or autumn of the previous year, and although fresh from a seedsman's point of view, they are necessarily a year old when they reach the hands of the grower. In order to be sure of securing a crop of parsnips, special arrangements must, therefore, be made with a friend or seedsman in Europe to send to this country immediately it is harvested there.

Culture should be carried on in an open situation, and in a deep, rich, friable, well-worked soil. The ground should be prepared much in the same manner as detailed for carrots. The ground may be laid out in beds arranged for irrigation, and the seeds thinly sown in drills, an inch deep, 15 to 18 inches apart, and as soon after the middle of October as it is possible to possess seeds of the crop of the current year. When the plants are of some size, they should be thinned out to 9 or 12 inches apart. Further attention is simply confined to weeding when needed, and watering about once a week when the weather is dry.

At hill stations, the seed should be sown during the spring months. If it belongs to the crop harvested in Europe towards the close of the summer of the previous year, no difficulty will be found in making it germinate.

Pea.

PISUM SATIVUM.

VERNACULAR NAME :—MATAR.

Plains.—Sow from beginning of October to the middle of November

Hills.—Sow from beginning of March to end of May and in autumn.

THIS is an annual plant, supposed to be a native of Central Europe and Western Asia, and is grown for the seeds, which are of well-known use in cookery both in a green and dry state. There are innumerable varieties in cultivation, comprising Dwarf Early, Second Early, and Main-Crop varieties. There are the round or smooth-seeded, and the wrinkled kinds. For the selection of the varieties to be grown the catalogue of the seedsman should be consulted.

The pea readily acclimatises in Northern India, and if seed is selected from the largest and best developed pods, it can be grown from acclimatised stock for a long series of years without degenerating to any great extent. Dwarf varieties and those of medium height are inclined to become taller in the course of time, but this, although a defect perhaps, does not interfere with the productiveness or general usefulness of the variety. When it is desired to save seed, a row or part of a row should be set apart for this purpose.

The pea is not partial to a particular kind of soil, but it prefers a loose, friable, moderately rich loam. Some recommend growing it in soil which has not been recently manured, but I find good results invariably follow the use of manure, provided the latter is thoroughly decomposed when being turned in to the ground. Any manure of the farm-yard class will answer, but if it contains a proportion of bone dust and wood ashes, so much the better.

The ground, after being manured and turned over, should be laid out in depressed rows, running north and south, each row being 2 feet wide, 2 to 3 inches deep, 3 feet being allowed between each set of rows for dwarf sorts, and 6 feet for the tall kinds. Two furrows at one foot apart, and from 2 to 3 inches deep, should then be drawn down the central part of the rows and the seeds sown in these about an inch apart and covered

over with 2 or 3 inches of soil, from the beginning of October to the middle of November. Some recommend sowing in single lines, but the double is preferable, owing to the support the plants give to each other when growing up. If the ground is moist when sowing, no water need be given until the plants are above ground, but if at all dry, the rows should be flooded with water immediately after sowing. As birds, squirrels, rats and various other garden pests are somewhat fond of digging the seeds up as soon as the latter are placed in the ground, a boy should be kept on guard over the pea plot until the plants are well above ground, and thus lessen the destruction these pests sometimes cause. Another method of protecting the seeds, and perhaps a more effective one, is to shake them in a cloth soaked in sweet oil, and again in a second cloth containing some red lead in powder form, but as the last-named substance is not always obtainable in up-country stations the first method of protection will in most instances have to be followed.

When the plants are from 3 to 4 inches high, the rows should be weeded, and the soil loosened and stirred as deeply as it is possible to do so without injury to the roots, at the same time drawing a little earth up against the plants. Supports in the form of sticks should then be firmly inserted in the ground along the two sides of the rows, and so placed that those of one side interlace overhead with those of the other. After this has been accomplished, the only care required until the blossoms appear is to attend to the water-supply. The pea does not require to be watered so frequently as some of the other common vegetable crops, but when the weather is dry it may safely be given every eighth day during growth, and twice a week after the pods begin to form. When the latter appear, small birds are often very troublesome. Various devices are adopted for scaring them off, but the most effective preservative is to employ a boy to guard the crop.

When gathering the pods for use, it will be found advantageous to use a pair of scissors to separate them from the plants; if broken off by the hand, the soft succulent shoots are apt to be injured.

At hill stations, the cultural treatment to be followed is the same as has been detailed for the plains. Sowings should be made during the spring and early summer months, and in autumn if the garden is situated on the south side of the hill. In gardens facing the north, sowings should not be made during the last-named season, unless ample protection can be afforded during severe weather.

Potato.

SOLANUM TUBEROSUM.

VERNACULAR NAME :—ALU.

Plains.—Plant the tubers or sets from the middle of September to the middle of December.

Hills.—Plant from the latter end of February to the middle of April.

THIS is a tuberous-rooted perennial, a native of the elevated regions of Chili and Peru, and of well-known value as an article of food. Its varieties are exceedingly numerous, and as new ones are constantly appearing and disappearing it is out of the question attempting to give a useful selection within the limit which has been laid down for this work. I shall, therefore, confine myself to a few general remarks on cultivation, and refer the reader for fuller details to one of the many special works that exist on the subject of potato cultivation.

The potato requires an open situation, and a rich friable well-drained soil, and should be made to rotate with other crops whenever possible, or, in other words, it should not be grown in the same plot for a series of years in succession. When grown in the hills in rich soil, only a moderate application of manure is needed

to secure a crop, but when grown in the plains a liberal supply of decomposed manure of the farm-yard class is essentially necessary, even if the soil is naturally of a rich description.

Propagation is carried on by means of the tubers, or sets as they are termed in gardening parlance. In the plains, these are planted in most districts of Northern India from the middle of September to the middle of October, using sets acclimatised to the plains; but if the sets are obtained from the hills or imported from Europe, they are usually planted later on, or from the middle of November to the middle of December. Much difference of opinion exists as to the best kind of set to employ. Some recommend large tubers cut lengthways into several pieces, allowing two eyes or leaf buds to a piece; others recommend a medium-sized set cut in halves, and others again recommend small-sized sets planted whole. All the various classes of sets will produce a crop, but the balance of opinion is generally in favour of planting small-sized tubers entire.

The method of planting the sets varies. In Europe dwarf varieties are generally planted 3 or 4 inches below the surface, in rows 15 inches apart, and 9 inches between the sets; tall varieties are planted at the same depth below the surface, but in rows from 2½ to 3 feet apart, and 9 to 12 inches between the sets, and the plants earthed up when sufficiently advanced. In the plains districts of Northern India, the native growers do not recognise dwarf and tall sorts, and usually place the sets of all varieties on the surface of the ground, in rows 2 feet apart, 6 inches between the sets, covering over with 3 or 4 inches of soil in the form of a ridge, and raising the latter up to fully a foot when the plants are sufficiently advanced. Water is freely given during growth, but when the crop is nearing maturity, which is known by the yellowish hue the leaves then begin to assume, it is sparingly given, and entirely withheld when the leaves begin to wither. When the latter including the haulm are quite withered up, the crop is

then dug and stored away in a dry place for use during the summer. As the potato does not make so luxuriant an overgrowth of leaf and haulm in the plains as it does in Europe or in the hills, the plains method of planting answers very well for such districts, but for the hills I am of opinion that the method of planting which is followed in Europe is to be preferred.

At hill stations, planting may be done during the latter half of February if the weather is open, but, as a rule, it is not safe to begin planting until March. Irrigation is seldom necessary in the hills, but in dry seasons, if a little water can be given during the early stages, it will be of great benefit to the crop.

In only one locality to my knowledge are two crops successfully produced during the year. This is at Khurpatal, 4,000 feet altitude, in the Naini Tal District. The growers here have good soil and an abundant supply of water, but I am of opinion that there are many such places with similar conditions to be found in our hills. Although nearly twenty years ago since it was first discovered that two crops could be produced during the year, I am not aware of other planters having followed the example. The summer crop is sown towards the end of February or beginning of March and harvested in June and July; the autumn crop is put down in September or beginning of October and dug during December and January. In favourable seasons fine tubers are often produced for the Xmas market.

Much has been written and said about disease-resisting varieties, but the writer's views on the subject are that all potatoes are liable to disease if improperly cultivated and grown continuously in the same land.

Radish.

RAPHANUS SATIVUS.

VERNACULAR NAME:—MULI.

Plains.—Sow from middle of August to end of January.

Hills.—Sow from beginning of March to end of August.

THIS is an annual, a native of China, and is cultivated for its fleshy roots, which are generally eaten raw when in a young condition. There are two principal varieties, the long-rooted and the globular or turnip-rooted, and numerous sub-varieties of both.

An acclimatised, long, white-rooted variety is extensively grown in Northern India by the native market gardeners, but it is not held in favour by the European, owing to its mildness and general want of flavour. It is usually sown in the rains, sometimes very early, as it is often met with in the bazaars by the middle of July. A second kind also exists with roots similar to the one above described, but it is not grown for the root, although the latter can also be used, but for its long-seed pods, which, when young and tender, are eaten both raw and cooked in vegetable curries. It is known to the European under the name of Rattailed radish (Raphanus caudatus) and by the native inhabitant as *seengra*, probably so named from the word *seeng* or horn, owing to the horn-like appearance of the pods.

All the imported varieties readily acclimatise in Northern India, and show no degeneration even when grown over a long series of years from the same strain, provided seed is always gathered from sound well-shaped roots, and that no plants of the common long-rooted white kinds are allowed to flower near them. When it is desired to save seed, the most shapely and best developed roots of October sowing should be taken up when about the size of a tennis-ball in the case of the globular kinds, and when rather thicker than the thumb in the case of the long-rooted sorts, and tranplanted in rich soil at 3 feet apart each way. Before planting them out, however, the leafy tops should be cut off, and also a portion of the fleshy root from the lower or root end. When ready for planting, the roots should only possess the growing crown, and about two-thirds of the fleshy part below, and, when being planted, should

be inserted sufficiently deep in the ground to allow of about 2 inches of soil to cover the crowns. Shortly after planting, new leaves will spring out, and numerous root fibrils will be produced from all sides of the original fleshy root to seek nourishment for the tall, branching, flowering shoot that will eventually follow.

The radish requires a rich, highly manured soil, and plenty of water from date of sowing until large enough to use. As the roots only remain in a fit condition for the table for a short time, sowings should be made at intervals of ten days or a fortnight when a constant supply is desired. The seeds, whether imported or acclimatised, may be sown at any time between the middle of August and end of January, but when it is desired to grow the common, long-rooted country kinds, a beginning may be made as soon as the rains have fairly commenced. Sowings may be made thinly broadcast in beds, or in regular lines at 6 inches apart, and in either case thinning out from 2 to 4 inches asunder. A single weeding will usually suffice for each sowing.

At hill stations, sowings may be made from March until the end of August, but when the rains are in progress some protection should be given during the occurrence of heavy showers.

Rhubarb.

RHEUM RHAPONTICUM.

Plains.—Not grown. May be forced on in the plains from November to January if crowns can be obtained from hill gardens.

Hills.—Sow in October and from beginning of March to end of April.

THIS is a perennial, with a fleshy, much-forked root, supposed to be a garden hybrid, and to have originated from some of the numerous species of Rheums that exist on the higher ranges of the Himalaya. It

is cultivated for the foot-stalks of the leaves, which form a well-known material for tarts.

Rhubarb is not adapted for cultivation in the plains, neither will it succeed in our lower hills. The seeds, if sown early in October, will germinate freely and produce small plants ready for transplanting during the spring.

The seeds should be sown thinly in pots or boxes filled with rich soil, and the plants, when they have made two or three secondary leaves, put out in the ground in a partially shaded situation at 3 feet apart each way. The soil should be deep, rich and moist, but at the same time the drainage must be good, or the roots will rot during the rainy-season months. After-cultivation is confined to occasionally stirring the soil between the plants during the growing season and keeping it free of weeds. Annually in autumn, a liberal application of decomposed manure of the farm-yard class, in the composition of which a large proportion of cowdung enters, should be worked into the soil surrounding the roots. It usually takes two years from date of sowing before the crowns are sufficiently strong to bear cropping. When the soil and situation suit the plant, and if manuring is attended to annually, the crowns will continue in a bearing condition for many years.

Rosemary.

ROSMARINUS OFFICINALIS.

Plains.—Sow during October.

Hills.—Sow from beginning of March to end of April.

THIS is a hardy evergreen shrub, a native of the South of Europe. It is a common plant in the kitchen gardens of Europe, where a decoction of the leaves is held in some repute for the relief of headaches, but in the gardens of this country it is rarely met with.

The seeds may be sown in pots during the month of October, and the young plants, when large enough to handle, transplanted singly into small-sized pots, and transferred from these to pots of a larger size as necessary. As the plants usually perish about the commencement of the rains, the tops may be cut during the hot weather, dried, and bottled, if it is desired to save the leaves for use.

At hill stations, sowings may be made any time dur ing the spring months, and the young plants grown in pots as detailed for the plains. When the plants are six inches high, they may be planted in a border or in a vacant place in the shrubbery. The plant being a hard-wooded shrub, will live in a hill garden for an indefinite number of years if the soil and situation suit it.

Rue.

RUTA GRAVEOLENS.

Plains.—Sow during October.

Hills.—Sow from beginning of March to middle of May.

THIS is a perennial low-growing shrub, a native of the South of Europe, and is sometimes used as a garnish, but more frequently it is merely grown for its medicinal properties. It thrives very well during the cold weather months if treated as a pot plant, but seldom lives through the rainy season.

The seeds may be sown in pots filled with a light sandy soil during October, and the seedlings, when a few inches high, transplanted to other pots filled with a somewhat richer soil, allowing five seedlings to a 12-inch pot.

The latter should be kept fully exposed to the sun during the cool months, but on the advent of hot weather, they should be removed to a partially shaded situation.

At hill stations, the seeds may be sown in pots during the spring months, and the seedlings transferred to the ground when a few inches high. When a stock has once been obtained in the hills, it may be perpetuated by dividing the old plants in spring, or by taking cuttings from them during the rains. The soil must be well drained or the plants will rot during the rains.

Sage.

SALVIA OFFICINALIS.

VERNACULAR NAMES :—SEESTI, SEESTURS.

Plains.—Sow during October.

Hills.—Sow from beginning of March to end of May.

THIS is a perennial shrub, a native of Europe, and is grown for its leaves, which form a favourite ingredient in stuffings. It can be made to live on the plains from year to year, but in order to secure such a result it should be planted in an open situation in a light sandy soil, and in a spot not liable to become water-logged during the rains. If the soil is heavy and retentive of moisture, it usually perishes before the rainy season has passed.

It may be raised from seeds thinly sown in pots during October, and grown on in these until the plants are 3 or 4 inches high, when they may be transferred to other pots, or planted in the ground. It may also be raised by taking cuttings from old plants during November or December, using hard well-ripened wood for the cutting. As half-a-dozen or even a less number of plants are usually sufficient to meet the requirements of most gardens, a place can generally be found to grow sage in an odd corner, or in vacant spots in a shrubbery or border. If required to be grown on a larger scale, the plants should be planted in regular lines at 18 inches apart, and one foot from plant to plant.

At hill stations, the seeds may be sown during the spring months in pots as before, and the plants transferred to the open ground when a few inches high. When a stock has once been secured in the hills, it may be kept up by cuttings taken off in April or during the rainy-season months.

Sa'sify.

TRAGOPOGON PORRIFOLIUS.

Plains.—Sow during October.

Hills.—Sow from beginning of March to end of May.

THIS is a dwarf long-rooted biennial, a native of England, and is cultivated for its fleshy roots which somewhat resemble a parsnip. These are cooked in various ways, but are generally stripped of their outside peel, cut into pieces and steeped in vinegar or lemon juice for a time, then boiled until soft and tender, serving up with white sauce or melted butter. This plant is not often met with in this country, but it thrives admirably in any good soil, and can be acclimatised.

The seeds should be thinly sown, in shallow drills made at one foot apart, during the month of October, and the plants, when of some size, thinned out to 6 inches asunder. All after-cultivation consists of the usual routine of weeding when needed, and watering once a week when the weather is dry. When sown in October, the roots are in fit condition to use by the middle of February, but as the plants flower and ripen seed on the advent of warm weather, they do not remain in good condition for the table for any length of time.

At hill stations, sowings may be made during the spring months, and in autumn the roots will be fit to use. As salsify does not flower at high elevations until

the second year, it furnishes a good vegetable for winter use.

Savory Summer : Savory Winter.

SATUREIA HORTENSIS : SATUREIA MONTANA.

Plains.—Sow during October.

Hills.—Sow from beginning of March to end of April.

THE summer savory is a hardy annual, a native of Italy, and the winter species an evergreen perennial shrub, native of the same country. Both are grown for their aromatic leaves, which are used as an ingredient in salads, and for flavouring soups. Neither of the species is often met with in this country, but both can be grown with success in the plains during the cold-weather months.

The summer species is always raised from seed which may be sown in pots, or in drills in the ground at a foot apart. The winter species is propagated by division or from cuttings, but in the plains it is usually only practicable to raise it from seed sown at the same time as the first named species, and the plants either grown in pots, or transferred to the ground at a foot apart each way. When it is desired to dry the leaves, the tops of the summer species should be cut when coming into flower, and the winter species treated likewise about the middle of the hot weather, drying both in the shade, and bottling them up for future use. The winter species, although a perennial, usually perishes soon after the rains commence, and in order to preserve it, drying the tops is the only practical measure to follow.

At hill stations, sowings of both species may be made in pots or in the ground during the spring months. The winter species when once secured may be perpetuated at high elevations by dividing the old plants in March, or by taking off cuttings in March and April or during the rains.

Sea-kale

CRAMBE MARITIMA L.

GROWN only in the hills. May be forced on the plains from the middle of November to the end of January.

Sea-kale is found in a wild state on the sea-coasts of Western Europe. It is much esteemed and extensively cultivated in England where the young leaf-stalks are prepared for the table by forcing the root-stock into growth in a dark place. A single species, *Crambe cordifolia* (*Stev.*), is recorded from the Western Himalaya and Western Tibet. The thick root-stock is said to be eaten in Baluchistan.

It may be propagated either from divisions or cuttings of the root, or from seed, but the former will produce the quicker results. The same instructions laid down for Rhubarb may be followed for Sea-kale, but two or three years' growth is necessary to obtain strong crowns. The blanching operation may be commenced as soon as the frost has killed the old leaves and the plants have assumed a dormant state. Each crown or root-stock is covered with an inverted flower pot, the drainage hole being stopped to exclude light. It may be forced into growth as required by completely covering the inverted pots with suitable heating manure; in a few weeks the shoots will be sufficiently grown for use. Crowns for forcing in the plains must be obtained from the hills, or Europe.

Shallot.

ALLIUM ASCALONICUM.

VERNACULAR NAMES :—GANDANA, GANDHAN.

Plains.—Sow the seeds or plant the bulbs during October.

Hills.—Sow or plant from beginning of March to end of April.

A HARDY bulbous perennial, a native of Palestine, and grown for its bulbs, which are used for much the same purposes as garlic.

It requires a light, rich soil, and is usually propagated by planting the bulbs at 6 inches apart, in rows one foot asunder, during October, but as it seeds freely in this country it may also be raised from seed sown during the same month. At the commencement of the hot weather the bulbs may be taken up and dried, or allowed to remain in the ground and dug up as needed.

At hill stations, the seeds and bulbs may be both sown and planted during the spring months.

Sorrel.

RUMEX ACETOSA.

VERNACULAR NAME :—KHATTA-PALAK.

Plains.—Sow during October.

Hills.—Sow from beginning of March to end of May.

THIS is a hardy perennial, a native of Britain, and is grown for its leaves, which sometimes enter as an ingredient in salads, but more often they are cooked and used in the same manner as spinach. There are several species of Rumex to which the name of sorrel is applied, but as they all require the same treatment the details which are given for the common sorrel will suit either of the others, should they fall into the hands of the grower.

The seeds should be thinly sown in a partially shaded situation, in any kind of soil, in drills made at one foot apart, during October, and the plants when well above ground thinned out to 3 or 4 inches asunder. After-attention is simply confined to weeding when needed,

and watering about once a week when the weather is dry.

At hill stations, sowings may be made during the spring months, but as the plants attain to a larger size than they do in the plains the drills should be at 15 inches apart, and a space of 12 inches allowed from plant to plant.

Spinach.

SPINACIA OLERACEA.

VERNACULAR NAMES :—PALAK, ISFANAJ.

Plains.—Sow from middle of September to middle of November.

Hills.—Sow from beginning of March to the end of April.

THIS is an annual, supposed to be a native of Northern Asia, and is cultivated for the sake of its succulent leaves which, when cooked and dressed, form an agreeable vegetable. There are several varieties, but those belonging to the round-leaved, smooth-seeded section are considered the best.

Spinach will grow in any good friable soil, and as it takes up little room and quickly attains maturity it is a useful vegetable for growing between other slower growing crops. Sowings should be made in succession in a partially shaded situation, but it also succeeds in the open, from the middle of September to the middle of November, and in warm localities, even later in the season. When grown alone, these may be made thinly, in drills from 12 to 15 inches apart, and the plants thinned out to 9 or 12 inches asunder. The soil should be frequently stirred, and water should be freely applied during growth. Flowering shoots should be nipped off as they appear, but if it is desired to save seed a few from the best developed plants may be allowed to

grow on. Spinach, however, degenerates to a considerable extent in this country, therefore the gathering of seed is not to be recommended.

At hill stations, sow during the spring and early summer months, and give the same general treatment as detailed for the plains.

Spinach, New Zealand.

TETRAGONIA EXPANSA.

Plains.—Sow during October.

Hills.—Sow from beginning of March to end of May.

A TALL growing annual, a native of New Zealand, and is grown for its leaves, which are made use of in the same manner as the common garden spinach. It is considered inferior to the latter, but as it is hardy and will grow in any soil it is deserving of more attention.

The seeds may be sown during October in beds, and when a few inches high, planted out in the ground in rows 3 feet apart and 2 feet asunder. After-cultivation simply consists of weeding when needed, and watering once a week during dry weather.

At hill stations, sowings should be made during the spring months, and the seedlings planted out in the same manner as detailed for the plains

Strawberry.

FRAGARIA.

Plains.—Plant the young runners from the middle of October to the end of November.

Hills.—Plant the young runners in September or October and in February, March or April.

Though the above is a dessert fruit, it is usually cultivated in the vegetable garden alongside of culinary vegetables, and being a great favourite with both the European and Indian, notes on the cultivation of vegetables can hardly be considered complete without including a few notes on the cultivation of the strawberry.

The garden strawberry, as found in India under good cultivation, is a scarlet conical-shape fruit, of medium size if compared with good home-grown fruit, and, with the exception of those produced in the hills, not quite up to the latter in flavour, though I have met with fruit grown in the neighbourhood of Meerut quite the equal both in size and flavour of much of the fruit one can purchase in the open market in England.

Wild strawberries are indigenous to various temperate parts of the world. The garden or cultivated forms originated from these, but as both the wild and cultivated forms hybridise readily, no particular species can be fixed upon as the parent of the garden strawberry.

The latter, though a perennial, is treated on the plains in India as an annual and is usually raised by planting the young runners or young plants from the middle of October to the end of November and sometimes during December, bearing fruit in March and April following and in some seasons bearing prolificly well on into the month of May. The young plants are either procured from the hills or furnished from a strawberry bed on the plains which bore fruit in the spring. In some seasons on the plains, particularly when the monsoon rains have been heavy and the strawberry patch often waterlogged, the whole of the plants including the young runners die out. When this happens, fresh supplies of young runners have to be procured from the hills or from a neighbouring district where rainfall has been lighter or where drainage may have been better. As a rule, I have always been able to save sufficient young runners on the plains for all requirements until the planting season in October by selecting a well-drained

plot of ground at planting time and by keeping it scrupulously clear of weeds all through the summer. Some recommend allowing the strawberry patch to become overrun with weeds after the plants have ceased bearing, giving as a reason that the shade afforded to the plants by the weeds is of assistance in preserving them during the summer. I have tried this method and have been able to preserve a certain number of plants to the end of the summer under it, but never in such numbers as under the system of keeping the patch scrupulously clean right throughout the summer.

When indenting for young plants from the hills, ask for established young stolons; although more expensive than the unestablished, they may be relied on to produce a satisfactory crop the first season.

Strawberries can also be raised on the plains from seeds sown in October or November, but as seedlings seldom bear until the following year it is more economical to plant young runners.

The ground for growing the latter should be in an open, exposed situation and, if practicable, quite free of the shade and drip of neighbouring trees. Slight shade does little harm, but the flavour of the fruit will be better if the patch is fully exposed to the sun. Any fairly good garden soil will answer for the cultivation of the strawberry, but the heaviest crops are produced by a rich friable loam which, if further enriched with a good dressing of well-decomposed farmyard manure when being prepared for planting, is so much the better. After the ground has been well turned over and thoroughly pulverised by the hoe or plough, lay it out in beds of convenient size for irrigation and plant the young runners in rows 15 inches apart and 12 inches from plant to plant. These distances are closer than is usually allowed in Europe, but in this country, except in the hills, the strawberry seldom produces such a luxuriant crop of leaves as in Europe, therefore the plants can

bear being planted closer. Where soils are stiff and clayey, planting on raised ridges instead of in level beds is to be preferred. When it is considered necessary to adopt the ridge system of cultivation, the base of each ridge should occupy 15 inches of ground and the plants inserted along the sunny side of the ridge at the same distance apart as recommended in planting on the level ground. Water should be freely given during dry weather from date of planting until the following monsoon season. Weedings should be carefully attended to and the soil between the plants stirred and loosened as often as possible. When the plants begin to blossom dry grass or straw should be spread thinly on the ground around the plants in order to preserve the fruit from contact with earthy particles. In districts much infested with white-ants dry grass or straw is attractve to this pest, so I do not advise continuing the use of either of these mediums for keeping the fruit clean if white-ants put in an appearance. In this event, broken pieces of earthen pottery may be used for keeping the fruit off the ground, but failing the pottery or some equally effective material, nothing need be used. Should the fruit at times be gritty, as is often the case after a shower of rain or after a watering, wash the fruit in cold water immediately before use. Washing the fruit in water is not conducive to preserving the flavour, but little harm will be done to the latter, if washing is deferred until within a few minutes before the fruit is required at table.

At hill stations, a strawberry bed will last in a bearing condition for four years, but the fruit will be larger and of superior flavour if the bed is replanted every third year. On the hills, planting may be done in early autumn or immediately after the rains are over, inserting the plants at the same distances apart as recommended for the plains. Autumn plantings give a small crop of fruit in the following spring and a full crop in the second year. Spring planting, if done early, sometimes yield stray fruits, but a crop is not produced until the following year.

Thyme.

THYMUS VULGARIS.

Plains.—Sow during October.

Hills.—Sow from middle of March to end of May.

A LOW-GROWING under-shrub, native of the South of Europe, and grown for its aromatic leaves, which are in demand for flavouring soups, and as an ingredient in stuffings.

Thyme is too delicate a plant for cultivation in the open ground in the plains, and it must therefore be treated as a pot plant. The seeds may be sown during October in pots kept in a partially shaded situation, and filled with light garden earth, leaf mould, and sharp river sand in equal proportions, covering over lightly with finely sifted soil and watering sparingly from a watering pot with a fine rose. When the seedlings are large enough to handle, they may be carefully taken from the seed pot and planted singly into small-sized pots, using the same kind of soil, and again transferred to larger sized pots as necessary. Water should be sparingly given at all stages, but at the same time the soil must not be allowed to become over-dry. In some years a few plants will struggle through the rainy season, but the majority of plants as a rule perish. It is therefore a good plan to sow annually, cut the tops during the hot season, dry them in the shade, and bottle for future use.

At hill stations, sowings may be made during the spring and early summer months in pots, and the plants grown on in these for a year and then planted in the ground. When in the pots a little shade may be given, but when planted out the spot chosen should be open and quite free from the shade and drip of trees, and should possess a light, friable, well-drained soil.

Tomato.

LYCOPERSICUM ESCULENTUM.

VERNACULAR NAME :—VILAIYTI BAINGAN.

Plains.—Sow from middle of July to end of October.

Hills.—Sow from middle of March to end of May.

THIS is a succulent annual, said to be a native of South America, and is grown for its fruit which, when ripe, is much esteemed in salads, for making sauces, and for flavouring soups. The varieties in cultivation are numerous, but as they all attain to perfection in this country it is not of material importance which variety or varieties are chosen. They all yield good seeds in this country, and may therefore be grown with success from acclimatised seeds, but as they are inclined to hybridise with each other, imported seed should be used when it is desired to grow the fruit for the exhibition table.

The seeds should be sown broadcast, in beds, made up in an open situation, from the middle of July to the end of October, and the plants, when a few inches high, planted in the open ground in any kind of good soil. In districts where frosts seldom or never occur, the plants may be planted in an open exposed situation, in rows 3 feet apart and 1½ feet between the plants, but in Northern India, where frosts are of annual occurrence, they should be planted in a sheltered situation and closer together. A good method of planting for cold districts is to place the plants out in sets of 3 rows, allowing 1½ feet between each row, 15 inches between each plant, and a space of 3 or 4 feet between each set of rows as a pathway, and when frost is prevalent, or when the nights are exceptionally cold, cover over every evening with mats or grass tatties until the weather becomes mild. All further attention is confined to weeding when needed, and watering about once in ten days when the weather is dry. Superfluous growths must be cut away so as to allow of a free circulation of air in order to prevent damping during wet weather.

If two sowings are made, one in July and one in September or October, fruit may be had in season from October to July, providing, of course, the protection has been attended to during the colder months in cold districts.

At hill stations, sowings may be made during the spring months, and the plants, when large enough to handle, planted out in well-drained ground at the distances apart given for warm districts in the plains. The spot chosen for growth should be sheltered from winds but not shaded from the sun.

Turnip.

BRASSICA RAPA.

VERNACULAR NAMES :—SHALGAM, SHALJAM.

Plains.—Sow acclimatised seed from end of July to middle of September. Sow imported seed from beginning of September to end of November.

Hills.—Sow from latter end of February to middle of June, or immediately after the rains.

THIS is a hardy biennial, found in a wild state over the greater part of Europe, and is grown for its fleshy roots, which are of well-known use in cookery.

Several good acclimatised kinds exist in Northern India, but, similarly to the acclimatised cauliflower, they must be sown early in the season to produce good results. When sown late, or at the time when imported varieties should be sown, they generally shoot into flower without forming a bulb. It is a good plan therefore to make use of both classes of seed, using acclimatised stock from the end of July to the middle of September, and imported stock from the commencement of September to the end of November. By doing so, turnips may be had in season over a much longer period of time than is possible by using only one or other of the two classes of seed.

The Swedish turnip (Brassica campestris Rutabaga) is a variety much esteemed by some, and may be sown at the same time as recommended for the imported varieties of the common turnip.

The turnip will thrive in any good garden soil, but it prefers a rich, well-manured, friable loam. In loose, friable soils, or in soils containing a considerable proportion of sand, the seeds may be sown broadcast, and covered over with a quarter of an inch of soil, in beds arranged for irrigation, and the seedlings thinned out to 6 or 9 inches apart. In heavy, tenacious soils, it is preferable to sow in regular rows or on ridges at 15 inches apart, thinning out to the same distance as in the case of broadcast sowings. If the ground is moist when sowing, no water need be given until the seedlings are well above ground, but if dry, water should be immediately applied. After-attention is confined to weeding when needed, and watering every fourth or fifth day when the weather is dry.

When it is desired to save seed, the finest and best developed roots should be selected, and treated in the same manner as the radish when the latter is grown for seed.

At hill stations, sowings may be made from the latter end of February to the middle of June, and again in autumn on the cessation of the rains. The same general treatment as detailed for the plains may be followed.

CHAPTER III.

Summer Season Vegetables.

In the preceding chapter, the arrangement followed has been an alphabetical one, under the common English names the various vegetables are known by. In this chapter, the arrangement is also alphabetical, but under the botanical names of the vegetables treated upon, followed by the common English name when one exists, and then by the vernacular name or names. It would have been preferable to have followed the same arrangement as in the preceding chapter, but this was not possible owing to many of the summer vegetables having no distinctive English name, and as vernacular names vary with the locality, the plan of arrangement adopted, although perhaps not perfect, is the simplest which could be devised under the circumstances.

Amarantus Blitum var. oleraceus.

" gangeticus.

Ver. Names :—Chaulai Sag, Lal Sag, Marsa Sag.

Plains.—Sow from beginning of April to end of July.

Hills.—Sow during the same months.

These are tall, soft-wooded annuals, and are extensively cultivated throughout India for the sake of the leaves, which are used in the same manner as spinach. There are numerous varieties, but they may all be accorded the same treatment.

The seeds should be thinly sown in any good soil, about half or three-fourths of an inch deep, in drills made at 18 inches apart, from April to the end of July, and the young plants, when well above ground, thinned out to a foot asunder. In order to maintain a succession, sowings should be made monthly. Sag requires little attention, but when sown in the hot weather months the plot should be irrigated every fifth or sixth day, and all sowings weeded occasionally.

Sowings may be made at hill stations during the same months as on the plains.

Indian Spinach, Malabar Nightshade.

Basella rubra.

Ver. Name:—Poi Koi.

Plains.—Sow in June or raise by cuttings during the rains.

Hills.—Not grown.

This is a perennial climber, with a red or white succulent stem and large heart-shaped leaves, and is grown for much the same purposes as sag. There are several varieties in cultivation, but the white-stemmed kind is the most common form in this part of the country. It is not largely cultivated anywhere, and seldom by Europeans, but it is deserving of more attention from the latter.

It may be raised from seeds sown in June, or by root or stem cuttings taken from old plants during the rains.

As it requires scarcely any cultivation, it may be planted in any odd corner, and given supports to climb upon, or it may be planted against trees or in the hedges surrounding the garden.

White Gourd.

BENINCASA CERIFERA.

VER. NAMES :—PETHA, KUMHRA, BHUNJA.

Plains.—Sow from middle of May to middle of July.

Hills.—Not grown above elevations of 4,000 feet.

THIS is an extensive climber of annual habit, with a large pumpkin-like fruit, somewhat hairy when young but becoming smooth when ripe, and covered with a bluish-white waxy bloom. It is not largely cultivated, but is common around Saharanpur, where it is principally grown for making a sweetmeat. When in a young state, the fruits form a good ingredient for vegetable curries, but are rather watery and tasteless if plainly cooked.

In Bengal the plant is said to be grown by the natives near their dwellings, and allowed to ramble over the thatched roofs, but around Saharanpur it is commonly grown on the ground without support.

A light sandy soil is always selected for its cultivation, and the seeds sown in patches of four or five seeds at 5 feet apart, weeding out all but the strongest plant should the whole of the seeds germinate. A little decomposed manure is sometimes dug into the spot where the seeds are planted, but this is never done if the plot was manured for a previous cold weather crop. The ground is kept clear of weeds until covered by the vines ; after this is accomplished, no further attention is required.

The seeds may be sown at low elevations on the hills at the same time as on the plains, and the crop given the same after-treatment as described for the plains.

Sword Bean.

CANAVALIA ENSIFORMIS.

VER. NAME :—BARA SEM.

Plains.—Sow from middle of April to end of June.

Hills.—Not grown above elevations of 4,000 feet.

THIS is a perennial climber, with scimitar-shaped pods, often over a foot long and containing numerous red or white beans. When in a young state, both pods and beans form most excellent vegetables, and as they are generally in best condition for the table during October and November when other vegetables are scarce, this plant deserves a place in every garden.

The seeds may be sown in any good garden soil, 3 inches deep, and at one foot apart, in rows 5 feet asunder, from the middle of April to the end of June. If some decomposed manure is dug into the ground before sowing, it will have a beneficial effect, but manuring is not essentially necessary. When the plants are a few inches high, the ground should be weeded, and strong sticks inserted on either side of the rows for the support of the vines. No further attention is needed except weeding between the rows occasionally, and replacing such supports as may give way during the course of the season.

At hill stations, sow the seeds at the same time and give the same treatment as described for the plains.

Common Chilli, Bell Pepper, Bird's-eye Chilli, Capsicum Chillies.

CAPSICUM FRUTESCENS.

CAPSICUM GROSSUM.

CAPSICUM MINIMUM.

VER. NAMES :—MIRICH, LAL MIRICH.

Plains.—Sow from beginning of April to middle of June.

Hills.—Sow from middle of April to end of May.

THESE are well-known annual or perennial herbs, and are extensively cultivated throughout India. There

are many varieties, but, owing to the confusion which exists in nomenclature, enumeration is almost set at defiance. As a general rule, the large-fruited kinds are of mild flavour, while the smaller-fruited sorts are hot and pungent.

The seeds may be sown broadcast, in beds, in an open situation, from the beginning of April to the middle of June, and the young plants, when a few inches high, planted in the ground at one foot apart, in rows from 1½ to 2 feet asunder. Any good soil will answer for cultivation, and if manured in autumn for a cold-weather crop no manure need be given when planting, but if not manured within the preceding six months, some decomposed manure of the farmyard class should be worked into the ground before planting. All after-attention is confined to weeding when needed, and watering once a week when the weather is dry.

The treatment required at hill stations is the same as has been detailed for the plains.

The very large mild-podded kinds, usually raised from seeds imported from Europe, may be sown on the plains during October and treated as a cold-weather crop.

Water-Melon.

CITRULLUS VULGARIS.

VER. NAMES :—TARBUZ, TARBUZA, KARBUJ.

Plains.—Sow from middle of January to end of March.

Hills.—Not grown above elevation of 3,000 feet.

THIS is an annual of trailing habit, and is extensively cultivated in Northern India in gardens, and in the dry beds of rivers. Its produce is more of a fruit than a vegetable in the popular sense of these terms, but owing to the plant being so often associated in gardens with our

summer vegetables, this chapter could hardly be considered complete if it was omitted. There are many varieties, which differ from each other in size, shape, colour of the flesh and of the seeds, but when well grown, the flavour of all is very much alike. Some may be sweeter, more juicy, and better flavoured than others, but soil and cultivation have a good deal to do with such differences.

The water-melon will grow in any good soil, but the finest fruit is produced by a heavily manured sandy soil. When grown in gardens it is usually sown in patches of three or four seeds at 5 feet apart, digging in two or three basketfuls of decomposed farmyard manure in the patches before sowing, and weeding out all but the strongest plant if the whole of the seeds germinate. During the early stages water is given every fourth or fifth day, but after the ground has become covered with the trailing vines it need only be given once in ten days. Water-melons enjoy a fair supply of moisture at the roots, but dislike moisture in the atmosphere, and for which reason sowings should be made as soon after the middle of January as possible, in order to have the fruit in season during the hot dry months.

When grown at low elevations on the hills, sow in February or March and give the same treatment as described for the plains.

Citrullus vulgaris, var. fistulosus.

Ver. Names :—Dilpasand, Tendu, Tensi.

Plains.—Sow from middle of June to end of July.

Hills.—Not grown.

This is a variety of the preceding, with a fruit about the same size and shape as a medium-sized turnip, dark-green and somewhat hairy when young, but usually smooth, and of a pale, lemon-yellow when ripe. When in a young state it is considered a good vegetable when

properly dressed, but it is rather watery and insipid if plainly cooked. Dr. Watt, in his Dictionary of the Economic Products of India, gives the following recipe for cooking it :—

"The fruit is picked when two-thirds grown, the size and shape of a common field-turnip. It is pared, cut in quarters, the seeds extracted, well boiled in water, and finally boiled in a little milk, with salt, black pepper, and nutmeg."

The seeds are usually sown in patches of three or four seeds at a yard apart, shortly before, or shortly after, the rains have commenced, weeding out all but the strongest plant if the whole of the seeds germinate. A light sandy soil with a little manure under the seeds is essential for the cultivation of this plant. In stiff, tenacious soils, it simply refuses to grow.

Woodrow, in his "Manual of Gardening in India," states that this plant is grown in Gujerat and Sind, during the hot season, in structures resembling the betel-houses of Bengal, but I have never heard of it being grown in the North-Western Provinces in this manner. It is not often met with in the last-named locality, but when seen it is always found cultivated on the ground without support, in the same manner as the common sweet and water-melons.

The Melon

CUCUMIS MELO.

VER. NAMES :—KARBUZ, KARBUZA.

Plains.—Sow from middle of January to middle of March.

Hills.—Not grown.

THIS is an annual of trailing habit, affording an esteemed and, to most persons, a highly palatable fruit. Like its congener, the water-melon, it is not a vegetable

in the popular sense of the term, but has been included here for the same reason as advanced in the case of that plant. Its varieties are multitudinous, but as they are all very capricious one never can be certain of a seed taken from a fruit of first-rate excellence producing fruit of equal quality in the following year. Some localities are famous for its melons, but the self-same seed when sown in a neighbouring district, under the same conditions of treatment, and in soil which is apparently the same, will often yield fruit of very indifferent quality. Really good melons are thus a purely local product, and when the soil will not produce high class fruit, it seems to be beyond the power of the grower to force it to do so.

No two writers agree as to the kind of soil most suited to the melon. Some recommend a friable loam, others a heavy soil into which enters a considerable proportion of clay, and others again a sandy soil. In this country the finest melons are raised by the natives by digging holes in sand in the dry beds of rivers and heavily manuring these, and as I have always had most success when I have made my sowings in a sandy plot of ground, I believe such a soil, highly manured, is on the whole best adapted for the growth of the melon in India.

The seeds are usually sown from the middle of January to the middle of March, but the best time for most districts is about the middle of February.

Various methods are adopted for preparing the ground for sowing. Sometimes it is laid out in sets of trenches, 18 inches broad, one foot deep, from 4 to 5 feet apart, manuring the bottom heavily, and sowing the seeds down the middle, in patches of three or four seeds at a yard apart, weeding out all but the strongest plant from the patches, and training the plant over the ridges. This method I consider a good one for stiff soils, but when the latter is of a light sandy character I do not think it is necessary to take so much pains. In light soils, all that need be done is to arrange the ground for

irrigation, dig holes at 3 or 4 feet apart, fill these up again after intermixing the soil with two or three basketfuls of decomposed farmyard manure, sow in patches of three or four seeds in the prepared holes, and weeding out all but the strongest plants as before.

During the early stages, water should be freely given, but when the fruit is about two-thirds grown, it should be sparingly applied, and when fully grown, only sufficient should be given to keep the plants from withering.

Some recommend a system of pruning, but when grown in the open ground, as is usually the case in India, it is not essentially necessary to do so. When pruned, the usual custom is to nip off the growing point when the plant has made three or four leaves. This will cause several lateral branches to shoot out from the axils of the leaves. These laterals usually flower at the third or fourth joint, but when they fail to do so, their points are nipped off in turn and afford other laterals, which seldom fail to flower and bear fruit. If more than one fruit sets on each of the leading branches, the one nearest the main stem is allowed to swell and all those above it rubbed off. All fruiting branches are stopped at five or six joints above the fruit, and all fresh shoots which spring from the axils of their leaves are nipped back to the first joint.

Cucumis Melo, var. Momordica.

Ver. Names :—Kachra, Phūnt, Tuti.

Plains.—Sow from middle of February to end of May.

Hills.—Not grown above 3,000 feet.

This is a variety of the common melon, with a smooth cylindrical fruit, often over a foot long, dark-green when young, and of a pale lemon-yellow and bursting spontaneously when ripe. When in a young state the fruit is served up as a salad in the same manner as the cucumber, and when ripe it is eaten like a melon.

The seeds are sown from the middle of February to the end of May, in any good soil, in the same manner and grown under the same after-conditions of treatment as detailed in the case of the common melon. A hot and rainy season variety is said to exist, but according to my experience seeds from the one packet will fruit either in the hot weather or rains, according as they are sown early or late.

CUCUMIS MELO. VAR. UTILISSIMUS.

VER. NAMES :—KAKRI, KAKNI.

Plains.—Sow from middle of February to end of April.

Hills.—Not grown.

THIS is a third variety of the common melon, with long cucumber-like fruits. When in a young state they are covered with soft, downy hairs, and are then of a pale or dark-green colour, changing to yellow when fully ripe. When in the first-named state they are eaten raw like cucumbers, which they much resemble when dressed, and when in the last-named state they are eaten like the melon, and tasting somewhat the same as an insipid variety of the latter.

This variety is on the whole hardier than the common melon, and will grow in any good soil, but, like the latter, it seems to prefer a heavily-manured sandy soil. The seeds are usually sown in patches at a yard apart, in beds arranged for irrigation, from the middle of February to the end of April, and given much the same after-treatment as detailed for the common melon.

Cucumber.

CUCUMIS SATIVUS.

VER. NAMES :—KHIRA, SUKASA.

Plains.—Sow from beginning of March to end of July.

Hills.—Sow from beginning of March to middle of July.

This is an annual of climbing habit, producing a fruit of well-known use when in its immature state. There are many varieties enumerated in the lists of European and American seedsmen, but the kinds these seedsmen supply are all too delicate for open air cultivation in this country; therefore, local varieties should be made use of in preference. There are not many forms of the latter, probably not more than two or three, if the dwarf bushy round-fruited variety described further on is excluded.

The cucumber will grow in any good garden soil with or without the aid of manure, but if a little of the latter is dug into the ground it will have a beneficial effect. The seeds are usually sown at 6 inches apart in a single or double line, in rows or sets of rows at 5 feet asunder, from the beginning of May to the end of July, and even later in warm, moist districts, and the rows staked up like peas when the plants are about 6 inches high. Early or hot-weather sowings require to be irrigated every fourth or fifth day, but rainy-weather sowings require little attention after staking up has been attended to beyond an occasional weeding.

At hill stations, sowings may be made during the same period of time as in the plains, and require the same after-attention as detailed for the latter.

Gherkin.

Cucumis sativus, var.

Ver. Names:—Gol-khira, Kharsai-khira.

Plains.—Sow from beginning of March to end of May.

Hills.—Not grown.

This is a variety of the common cucumber of dwarf bushy habit, producing an egg-shaped fruit, dark-green and more or less mottled with white markings when

young, and of the same rusty-brown colour as the common long-fruited sorts when ripe. Although not the Gherkin of the West Indies, familiar to most persons in its pickled state, its fruit resembles that of the latter, hence its Anglo-Indian appellation.

Like the common climbing cucumber, it will succeed in any good soil, but it requires more aid from manures than the former to bear abundantly. When preparing the ground for the reception of the seed, it should therefore be liberally enriched with manure of the farmyard class, then laid out in ridges 6 inches high and 15 inches apart, and the seeds sown along the two sides of the ridges at 3 or 4 inches asunder. The furrows between the ridges should be watered every fourth or fifth day, and the soil stirred and loosened at every opportunity. As the plants only yield the immature fruit required at table for a limited period of time, sowings should be made at intervals of a fortnight from the beginning of March to the end of May.

This variety of cucumber is a purely hot-weather crop and does not succeed if sown during the rains.

Pumpkin, Red Gourd, Red Pumpkin.

CUCURBITA MOSCHATA.

VER. NAMES :—KADDU, MITHA-KADDU, SITAPHAL.

Plains.—Sow from beginning of February to middle of July.

Hills.—Sow from middle of March to end of June.

THIS is an annual of climbing or trailing habit, and is extensively cultivated throughout India for its fruit which, when cooked and dressed, both in an immature and ripe state, is much esteemed as a vegetable, while some varieties are made up into a sweetmeat in the same manner as the fruit of the petha (Benincasa cerifera). There are many varieties, the fruit of all being generally

large, but varying greatly in shape and colour of the skin. Some varieties are flat and sharply ribbed, others are ovoid and bluntly ribbed, and others again are long, clubbed towards the apex, and with only the rudiments of the ribbed markings. The colour of the skin varies from greenish-white to a brownish-red, but all agree in having flesh of a reddish or salmon-red hue when fully matured. The pumpkin in its early stages is sometimes difficult to distinguish from some varieties of the vegetable marrow, but its varieties all differ from the latter by being fleshy when ripe, and keeping in a usable condition for months after being cut, while the fruit of all varieties of marrows are only fleshy when young, becoming hard and woody when ripe, and the interior ultimately shrinking up to a cavity containing nothing but the seeds and a little dry vegetable matter.

The Indians recognise the value of a hot and rainy-season type of pumpkin. The varieties of the first type are generally grown on the ground without support, while those of the second are grown near their dwellings and trained over the thatched roofs of the latter.

The pumpkin will grow in any soil, but if the latter is heavily manured, the fruit will sometimes attain an enormous size. Hot-season varieties are sown from February to the end of April and rainy-season varieties from the middle of June to the middle of July. The seeds are sometimes sown in beds, and the young plants, after they have made two or three secondary leaves, planted in the open ground at 5 or 6 feet apart each way, but more often the seeds are sown in patches of three or four seeds in their permanent quarters at the above distances apart, weeding out all but the strongest plant should the whole germinate. Before sowing or planting, the patches should be heavily manured with any kind of decomposed manure. Water is freely given to hot-weather sowings, and the ground kept free of weeds until it is closely covered by the trailing vines. After this is accomplished, no further weedings are required.

The fruit of June and July sowings usually rots on the ground if the vines are not trained over some support, but owing to its great weight a strong frame-work erection, or the roof of a hut, is almost a necessity for its support.

At hill stations, sowings may be made from the middle of March to the end of June. It seems to be quite immaterial whether the seeds used belong to the hot or rainy-season types of the plains. All varieties seem to do well in the hills above a certain elevation, with or without support.

At elevations of 3,000 to 4,000 feet, hot-season sowings are grown on the ground as in the plains, and rainy-season sowings trained over the thatch of the dwellings, also as in the plains, but at elevations of 5,000 to 6,000 feet all sowings are grown on the ground without support. The vines are often allowed to trail over the stony banks of terraced land.

Squash, Vegetable Marrow.

CUCURBITA PEPO.

VER. NAMES :—KUMRA, SUFED KUMRA, VILAIYTI KADDU.

Plains.—Sow from middle of February to middle of April.

Hills.—Sow from middle of March to middle of June.

THIS is an annual of climbing or trailing habit, and is grown for its fruit which, when about three-parts grown, is perhaps the most palatable of the pumpkin tribe to the European inhabitant. It is not generally cultivated outside of gardens in Northern India, but it succeeds with little trouble if treated as a hot-season vegetable. Its varieties are numerous, but when cut at the proper time, all seem very much alike when cooked and dressed for the table.

The seeds should be sown in highly-manured patches, in any good garden soil, from the middle of February to the middle of April, at the same distance apart, and grown on under the same after-treatment as detailed for the pumpkin. Like the hot-season varieties of the latter, the vines should be allowed to ramble over the ground without support.

At hill stations, sowings may be made from the middle of March to the middle of June. The earlier sowings at high elevations will need protection. When grown at high elevations, the plants do not appear to be affected by rain to the same extent as is the case in the plains.

Common Yam.

DIOSCOREA SATIVA.

VER. NAME :—RATALU.

Plains.—Plant the roots from February to May.

Hills.—Plant from March to May.

THIS is a climber with an annual stem and a long flat, more or less branched, fleshy perennial root which, when cooked, somewhat resembles the potato. The term, Yam, is indiscriminately applied to several species of cultivated and wild Dioscoreas, the roots of which are used as an article of food, but the one under notice is the kind which appears to be most esteemed and most universally cultivated.

It is usually propagated by planting the upper portion of the main root, and small side roots which proceed from it, during the spring and early summer months, in holes previously prepared by being dug to a width of 2 feet, and to a depth of 4 or 5 feet, and the soil, when being turned, liberally intermixed with decomposed manure. It is also propagated by planting the bulbils which proceed from the axils of the leaf stalks before the stems die down, but as these take fully two years

to form a root of any size the first method of propagation is most in vogue. It is not extensively cultivated in this part of the country, but a few plants are found in most native gardens of any size, planted near a hut or outhouse, or near a tree where the climbing stems can find support. It is sometimes also grown in trenches and the stems trained over the ridges. When desired to grow it on an extended scale, this method of cultivation is perhaps the most practical one to follow.

It is cultivated along the lower hills much after the same fashion as in the plains, but as it requires a considerable amount of heat it is not grown above elevations of 3,000 or 4,000 feet.

Country French Bean.

DOLICHOS LABLAB.

VER. NAMES :—GHIYA-SEMI, MAKHAN SEM, SEM, SEMBI.

Plains.—Sow from beginning of May to end of June.

Hills.—Sow during the same months as in the plains.

THIS is a perennial climber, but annual under cultivation, and is extensively cultivated throughout this country for its pods which, when immature, are used in the same manner as French beans. There are numerous varieties, some with straight and others with scimitar-shaped pods, some being quite smooth, and others being more or less wrinkled, but those which are most esteemed as vegetables are the kinds which possess a smooth pale-green pod.

The seeds may be sown in any good soil either with or without manure, but the latter if given is of course beneficial, at 6 or 8 inches apart, in rows from 5 to 6 feet asunder, from the beginning of May to the end of June, and staking up the rows like peas when the plants are a few inches high. A luxuriant growth is made during the rainy-season months, but towards the close of the rains the plants begin to flower and usually commence bearing soon after the rains have ceased, and continue

doing so until cut down or checked by frost. In mild seasons they will flower and yield a few pickings on the advent of warm weather in spring, but as there are many other varieties of vegetables then in season, spring pickings are not in great demand.

At hill stations, this bean and its varieties may be sown at the same time as in the plains, but as the scarlet runner bean is easily cultivated at high elevations, and its pods being very much better flavoured than the best varieties of Dolichos Lablab, I would recommend the former to be always grown in preference to the latter.

Sweet Potato.

IPOMŒA BATATAS.

VER. NAMES :—MITHA-ALU, SHAKARKAND.

Plains.—Plant from latter end of April to end of June.

Hills.—Not grown above elevations of 4,000 feet.

THIS is a climbing or trailing plant, with an annual stem, and a fleshy tuberous root about 6 inches long, pointed at both ends and swollen in the middle, which, when cooked and dressed, is much esteemed by some. There are two varieties, one with a red, and the other with a white, skin, but the latter is considered to be the better of the two.

The sweet potato will grow in any soil, but the sweetest and best flavoured tubers are produced in a sandy soil, lightly manured. It is usually propagated by cuttings planted at 18 inches apart each way, taken from shoots which appear during the early summer months in plots of grounds which were under a sweet potato crop in the previous season, or by planting, at the same distance apart, thin tubers or those which seem intermediate between a thickened stem and a tuber, saved for the purpose from the crop of the previous season by being buried in sand. The latter

are usually planted from the latter end of March to the middle of May, but cuttings are usually inserted in June after the first heavy fall of rain. Weeds are kept down until the ground is covered by the plants, but after this is accomplished, no further care is required.

The tubers are ready to use in autumn and the early months of the cold weather, and as the variety of vegetables is then somewhat limited, the sweet potato is deserving of more attention from the European than it at present appears to receive.

When grown at low elevations on the hills, treat the same as on the plains.

Ochro, Gombo, Ladies' Fingers.

HIBISCUS ESCULENTUS.

VER. NAMES :—BHINDI, BHINDI TORI, RAMTURAI.

Plains.—Sow from beginning of March to end of July.

Hills.—Sow from middle of April to middle of June.

THIS is an annual, and is extensively grown for the unripe seed pods, which are of well-known use in Indian cookery. There are several varieties, but those imported from America are the best, being comparatively free from the spiny hairs found on the pods of the Indian kinds.

The edible Hibiscus thrives in all kinds of soils, but it attains to greatest perfection in a friable highly manured loam. The seeds may be sown in beds, and the plants, when 4 or 5 inches high, planted in lines at 2 to 2½ feet apart each way, or they may be sown in their permanent quarters in lines at these distances apart, allowing a space of 6 inches between each seed, and afterwards weeding out to as near 3 feet as possible should the majority of the seeds germinate. In order to maintain a supply of pods, sowings should be made every three weeks from the beginning of March to the

end of July. Hot-weather sowings require to be irrigated every fifth or sixth day, and all sowings should be weeded whenever necessary.

At hill stations, sowings are made during much the same period of time as in the plains, but as this Hibiscus likes warmth a well-sheltered situation facing the south should be selected for its cultivation whenever possible

Red Sorrel—Rozelle.

HIBISCUS SABDARIFFA.

VER. NAMES :—LAL-AMBARI, PATWA.

Plains.—Sow from beginning of April to end of May

Hills.—Not grown.

THIS is a tall growing annual of somewhat shrubby habit, and although not a culinary vegetable in the popular sense of the term, it being usually associated in the garden along with other culinary vegetables, I have included it here for this reason. It is cultivated for the sake of its fleshy calyx or flower receptacle which, when fully formed, is sometimes used in tarts, but more often for making a jelly which resembles the red currant jelly imported from Europe in taste and flavour. There are two varieties : one with reddish stems and a deep red calyx, and the other with green stems and a calyx of the same colour. The red variety is considered the better, and being the hardier of the two it is the one most frequently met with.

The seeds are usually sown in beds from the beginning of April to the end of May, and the plants, when 4 or 5 inches high, planted out in rich but not recently manured ground, at 4 feet apart each way. After attention is simply confined to weeding when needed, and watering every seventh or eighth day during dry weather. As the plants are often cut down by frost in Northern India before the fleshy flower receptacles

are fully formed, a warm, well-sheltered spot should always be selected for its cultivation.

Bottle Gourd.

LAGENARIA VULGARIS.

VER. NAMES :—AL-KADDU, LAUKI.

Plains.—Sow from beginning of March to middle of July.

Hills.—Sow from beginning of April to end of May.

THIS is an annual of climbing or trailing habit, and is extensively cultivated throughout India for its fruit which, when about half formed, supplies a fairly good vegetable. The fruit varies greatly in size and shape, but it is always of a whitish green colour both in its immature and ripe state. There are many varieties as already indicated, but the most common perhaps is the one with the bottle-shaped fruit, from which the plant derives its English appellation. Other varieties exist with flat, globular, ovoid, and long fruit, varieties of the latter often being seen with fruit considerably over a yard long.

It will grow in any good soil, but prefers a heavily manured friable loam. The seeds are sown in beds and the young plants, after they have made two or three secondary leaves, planted out at 5 or 6 feet apart, or they are sown in patches of four or five seeds in manured holes, at the above distances asunder, weeding out all but the strongest plant if the whole of the seeds germinate. Hot-weather sowings are freely watered and grown on the ground without support, but rainy-weather sowings are usually made in regular rows at 6 feet apart, staking up the rows like peas when the plants are 5 or 6 inches high. This gourd is frequently grown during the rains by the natives, trained over the thatch of their dwellings, in which position it seems

to attain a greater perfection than is possible when supported on sticks.

At hill stations, sowings may be made from the beginning of April to the end of May, choosing a warm sunny position for its cultivation whenever possible.

Sponge Gourd.

LUFFA ACUTANGULA.

VER. NAMES :—JHINGA-TORI, KALI-TORI, SATPATIYA.

Plains.—Sow from beginning of March to middle of July.

Hills.—Not grown above elevations of 3,500 feet.

THIS is an annual of climbing or trailing habit, and is grown for its fruit which, when about half formed, is considered a good vegetable when properly dressed. When full grown, the fruit is generally about a foot long, club-shaped, sharply ribbed from end to end, and of a dark green colour. A variety with a pear-shaped fruit exists, which produces a fruit about the same size as a good specimen of the fruit of that name, but it is not common, and not being of better quality than the large-fruited kind, no end will be gained by seeking for it.

This plant will thrive in all soils, but, like most other culinary vegetables, it responds to good treatment; therefore, before sowing, the ground is all the better for being liberally manured. The seeds are sown from the beginning of March to the middle of July. Hot-weather sowings are made in patches at 3 feet apart each way, and the plants allowed to trail over the ground without support. Later sowings or those made in June and July are made in rows at 5 or 6 feet apart, allowing a space of 6 or 8 inches between each seed, and the rows staked up like peas when the plants are

4 or 5 inches high. Hot-weather sowings are irrigated every fourth or fifth day, and all sowings are weeded when necessary, but nothing further than ordinary attention is needed.

When grown at low elevations on the hills, sow at the same time and treat the same as on the plains.

Cylindric-shaped Sponge Gourd.

LUFFA ÆGYPTIACA.

VER. NAMES :—DHANDHAL, GHIYA-TORI.

Plains.—Sow from beginning of March to middle of July.

Hills.—Not grown above elevations of 3,500 feet.

THIS is an annual of the same climbing or trailing habit as the preceding species, with a smooth cylindrical fruit usually about a foot long, but often attaining to a greater length when grown in rich soil, and when immature, used in the same manner as that of the previously described species.

The seasons for sowing and methods of cultivation are exactly the same as has been detailed for Luffa acutangula, and therefore need not be again repeated.

Hot-Season Variety Karela.

MOMORDICA CHARANTIA.

VER. NAME :—RAINY-SEASON VARIETY, KARELI.

Plains.—Sow from beginning of March to middle of July.

Hills.—Not grown above elevations of 4,500 feet.

THIS is a slender climbing or trailing annual, and is extensively cultivated throughout India for the sake of the immature fruit. There are two principal varieties,

a hot and a rainy season one, and several sub-varieties of both. The fruit of the first class is usually 3 or 4 inches long, oval in shape, very warty or tubercled on the surface, dark-green when young, and changing to orange red when ripe. The fruit of the second class is from 5 to 7 inches long, not so swollen in the middle as that of the first, pale green and sometimes almost white when young, but otherwise it answers to the same description as the first. The fruit of all varieties is very bitter, but when properly prepared in a vegetable curry, the manner in which it is most commonly cooked, the bitterness is found to be agreeable to most palates.

This plant will thrive in any good soil, and may be sown at the same time and given the same after-treatment as detailed for the Luffas, *i.e.*, the hot-season variety being grown on the ground without support, and the rainy-season variety grown in rows with sticks for the support of the vines.

When grown on the hills, select a warm situation and sow from April to June. After-treatment is the same as on the plains.

Mucuna capitata. Uda-sem.

Mucuna nivea. Tohar-sem, Khamach.

Plains.—Sow from middle of April to middle of June.

Hills.—Not grown.

These are annuals of twining habit, and are both grown for the immature seed pods. The latter hang in clusters, are about 6 inches long and, in the case of both species, are covered with a black velvet-like down which, on being rubbed off, discloses a smooth-skinned pod resembling a French bean, and not much inferior to the latter when cooked, providing it is gathered when young. The pods of both species are very much alike, but when dry, those of Mucuna capitata contain 5 or 6 black seeds, and those of Mucuna nivea about the same number of ash-coloured seeds.

The seeds may be sown in any good soil at 6 inches apart, in rows 5 or 6 feet asunder, from the middle of April to the end of June, and the rows staked up with branches for the plants to climb upon when the latter are 4 or 5 inches high. Water should be given once a week until the rains begin, afterwards no other attention is needed further than keeping rank weeds under. The pods are in season from the middle of September to the end of November, and even later when the winter is mild.

Pursilane.

PORTULACA OLERACEA.

VER. NAME :—KULFA SAG.

Plains.—Sow from middle of March to end of June.

Hills.—Sow from middle of April to middle of September.

THIS is a dwarf creeping annual herb with small fleshy leaves. The latter are said to possess cooling and anti-scorbutic properties. When young they are sometimes used in salads, but more frequently they are boiled in stews or served up like spinach. It is extensively grown in some jail gardens for the use of prisoners, and in some localities it is found in every native garden, but it is not much thought of by the European.

The seeds are usually sown thinly broadcast in beds arranged for irrigation, and being small, are lightly covered with fine soil, from the middle of March to the end of June. As the plant is short-lived, the leaves do not remain in a condition to use for any length of time. When a constant supply is desired, sowings should be made at intervals of a fortnight.

At hill stations, sowings may be made at any time during the spring and summer months.

Cape Gooseberry.

PHYSALIS PERUVIANA.

VER. NAME :—TIPARI.

Plains.—Sow from middle of April to end of June.

Hills.—*Sow from beginning of April to end of* May.

THIS is a *soft-wooded* perennial, but an annual under cultivation, and is grown for its gooseberry-like fruits. The latter forms good material for tarts and are also in demand for making an esteemed preserve. Properly speaking, it would be more in place if described under the head of dessert fruits, but, like a few other plants which have already been described, it has been included here owing to it being always associated in the garden with culinary vegetables.

It will thrive in all soils, but it bears most profusely when grown in a rich friable loam, and in spots not liable to become water-logged in the rains. The seeds are usually sown broadcast in beds from the middle of March to the end of June, but the middle of May is about the best time to sow, and the young plants, when 3 or 4 inches high, are planted in the ground at 3 feet apart, in rows 3½ feet asunder. Water is freely given until the rains commence, and the soil frequently stirred and loosened during the course of growth. When the plants are about a foot high, they should be earthed up to half their height, and when the rains cease, water should be again applied every eighth or ninth day. In Northern India the fruit generally begins to ripen about the middle of February, but ripe fruit is usually not plentiful until about the middle of March.

At hill stations, sowings should be made a little earlier than in the plains, or as soon after the beginning of April as possible. It does not flourish at elevations above 4,000 ft.

Goa Bean.

PSOPHOCARPUS TETRAGONOLOBUS.

VER. NAME :—CHARI-CONI-SEM.

Plains.—Sow from beginning of May to end of June.

Hills.—Not grown.

THIS is a twining annual, with a square-looking pod from 6 to 9 inches long, and which, when green, is made use of in the same manner as that of the French bean. It is a common plant in some of the warmer parts of India, but not often met with in the Northern Provinces. It grows freely if sown at the same time and under the same treatment as detailed for Dolichos Lablab and its varieties, but it bears rather sparingly, and is therefore not a desirable species for cultivation.

Egg Plant.

SOLANUM MELONGENA.

VER. NAMES :—BAINGAN, BRINJAL.

Plains.—Sow in October, during the spring months, and at the beginning of the rains.

Hills.—Not grown above elevations of 4,000 feet.

THIS is a perennial soft-wooded shrub, but an annual under cultivation, and is extensively grown throughout India and other tropical countries for its fruit which, when cooked and dressed in various ways, forms a most palatable vegetable. There are numerous varieties, differing chiefly in shape, size, and colour of the fruit. One variety has a scarlet fruit of the same size and shape as the fruit of the Large Red Tomato ; another has a pure white egg-shaped fruit, but these two are considered more ornamental than useful, though the fruit of the latter is sometimes eaten. The varieties which are most esteemed as vegetables have dark or light purple fruit, and are either quite round or cylindrical in shape.

In Northern India three sowings of this crop are usually made in the course of a year. The first is made towards the end of October broadcast in beds, and the young plants allowed to remain in the latter under a covering of grass thatch raised about 20 inches above the beds until the advent of mild spring weather. As soon as all danger from the occurrence of frosts is past, or about the middle of February, the young plants are planted in highly-manured and well-worked ground, in rows 2 feet apart, and 18 inches from plant to plant. Water is given about once a week, and the ground is frequently stirred and loosened. This sowing begins to bear fruit towards the end of March, and continues to furnish supplies up to the beginning of the rains.

The next sowing is made in beds as before during the spring months, or any time between the middle of February and end of March, and the plants, when large enough to handle, are planted out at the same distances as before and given the same cultural treatment. This sowing begins bearing about the end of May, and continues to furnish supplies during the greater part of the rainy season.

The third sowing is made early in the rains and given the same after-treatment as the others. This sowing begins bearing towards the close of the rains, and continues to furnish supplies during the early autumn months. In very wet seasons, and especially if the soil is stiff and clayey, plants of this last sowing often die off before fruiting. The most prolific crop is usually obtained from plants of October sowings planted out in the spring months.

Snake Gourd.

TRICHOSANTHES ANGUINA.

VER. NAMES :—CHACHINDA, CHACHINJA.

Plains.—Sow from middle of April to middle of July.

Hills.—Not grown above elevations of 4,000 feet.

THIS is an annual of climbing habit, and is grown for its long cucumber-like fruits which, when 5 or 6 inches long, are cut into strips and served up like French beans. There are two varieties, the fruit of both being from 1½ to 3 feet long. One is of a pale green colour with irregular white stripes stretching from end to end, and the other is dark green with pale green striped markings.

The seeds are usually sown in any good soil at 6 inches apart, in rows 5 or 6 feet asunder, from the middle of April to the middle of July, staking up the rows with sticks when the plants are a few inches high in the same manner as detailed for the common cucumber and similar climbing rainy season crops. In order to maintain a successional supply, two sowings should be made, one in April or May, and the other after the rains have commenced. The first sowings will furnish a supply during the first months of the monsoon, and the second will maintain a succession well into the cold weather.

When grown on the hills, sow at the same time and give the same after-treatment as described for the plains.

Palwal.

TRICHOSANTHES DIOICA.

Plains.—Sow from beginning of May to middle of July.

Hills.—Not grown above elevations of 3,000 feet.

THIS is a climbing or trailing perennial with annual stems, and is extensively cultivated in the warmer parts of India. Although found in a wild state in the Northern Provinces, the cultivated form is by no means a common plant in these districts. Like others of its tribe, it is grown for its fruit which, when in an immature state, is much esteemed as an ingredient in vegetable curries. The fruit is about 4 inches long, pointed at both ends and swollen in the middle; when young, pale green, and when ripe, changing to a deep orange colour.

The seeds are usually sown in a light well-drained soil in patches at 3 feet apart, from May to the middle of July, and the stems allowed to trail over the ground without support. It is also trained on trees, and grown in hedges where the stems can find support; but it is believed to fruit more profusely when grown on the ground. Like all rainy season crops, it flourishes under the wet conditions of weather then usually prevalent, but at the same time it dislikes stagnant moisture at the roots. When selecting a spot for its cultivation, a high well-drained position should always be chosen.

When grown at low elevations on the hills, sow at the same time and give the same after-treatment as described for the plains.

Asparagus Bean. Cuba Bean.

VIGNA CATIANG, VAR.

LOBIA.

Plains.—Sow from beginning of June to end of July.

Hills.—Not grown above elevations of 3,000 feet.

THIS is an annual of climbing habit, and is grown for its long pod which, when immature, is served up like the French bean. There are several varieties cultivated in this country as field crops, but the garden form differs from these by having a much longer pod and larger seed. The pods of the field sorts are about one-fourth of an inch broad and average from 4 to 6 inches long, while those of the garden kind are about half an inch broad and average from 9 to 12 inches long.

This plant is of easy culture, and the seeds may be sown in any good soil at 6 inches apart, in rows 4 or 5 feet asunder, from the beginning of June to the end of July, staking up the rows with sticks when the plants are a few inches high. June sowings begin

to bear about the middle of the rains, and early July sowings about the middle of August.

When grown on the hills, select a warm sunny corner and sow from April to June. After-treatment is the same as on the plains.

Maize, Indian Corn.

ZEA MAYS.

VER. NAMES :—MAKA, MAKI.

Plains.—Sow from middle of April to middle of June.

Hills.—Sow from beginning of May to end of June.

THIS is a well-known cereal, and is extensively cultivated throughout India for its grain, but when grown in gardens, it is usually cultivated for its cobs which, when in a green state, are an agreeable vegetable to most persons. There are many varieties, but those which are imported from America are the best, only they must be grown for a year or two in this country, in the plains at all events, before they yield well-filled cobs.

Sometimes freshly imported seeds give excellent results, but, as a general rule, the cobs are better filled, though the individual grains may be somewhat smaller, from seeds that are acclimatised.

Maize requires a rich heavily manured well-worked soil, and a constant supply of water from date of sowing until the cobs begin to ripen. When grown for its grain it is not sown until the breaking of the rains, but when cultivated for its cobs, sowings under irrigation may be made at intervals of a fortnight from the middle of April to the middle of June, and even into July when a prolonged succession is desired. In some localities it is also grown during the cold weather, but it is only successful in districts where frosts seldom or never occur. In the Northern Provinces it will often form cobs when sown at the beginning of the cold weather, but,

as a rule, the plants are cut down by frost before the cobs have filled.

The seeds are usually sown at 6 inches apart in rows two feet asunder, afterwards weeding out to as near 18 inches as possible, transplanting thinnings to blanks where these exist. When the plants are about 15 inches high, they are earthed up to a height of 4 or 5 inches, and the operation repeated when they are about 2½ feet high, raising the ridges to about a foot at the second earthing up. After this has been accomplished, all further attention is confined to attending to the water-supply. During dry weather the furrows should be flooded every fifth or sixth day, and in the rains, during the occurrence of long breaks, an occasional watering should also be given.

At hill stations, sowings may be made from the beginning of May to the end of June under the same treatment as detailed for the plains. Freshly imported seeds never fail to give good results in the first year at high elevations, and when such can be obtained they should be used in preference to acclimatised stock.

CHAPTER IV.

Flowering Annuals.

The varieties of annuals, and such biennials and perennials that are grown in this country as annuals are exceedingly numerous. Some kinds are very fugitive in their duration, but owing to their beauty of colour, elegance of form, and ease with which they can be grown, much pleasure may be derived by indulging in their cultivation. Many kinds acclimatise readily, and when a general display of flower and colour is only aimed at, I would recommend the use of acclimatised seed in preference to imported, owing to its cheapness, greater certainty of germination, and more general hardiness of the young seedlings, but when quality of flower, or specimens for an exhibition table is the desired end, the more uncertain and more expensive imported seed must be made use of.

Speaking generally, annuals will grow in all good soils but prefer a rich porous soil, sufficient water to keep it moderately moist, shade during the middle of the day in the early stages, and full exposure to the sun when somewhat advanced; therefore, when cultivating them, these conditions should always be borne in mind. The seeds may be sown in pots, nursery beds, or in the ground they are intended to occupy, but as the great majority of annuals are much benefited by transplantation, the safest and most economical plan is to sow in pots or small seed-beds, and transplant the seedlings to their permanent quarters, be it pot, bed, or border, as soon as they are large enough to handle.

For pot cultivation, the best mixture of soil to use is one-third rich friable earth from the surface of the

vegetable garden, one-third composed of well decayed leaf-mould and thoroughly decomposed cow or horse manure in equal proportions, and the remaining third, sharp river sand. For seed pots, the mixture should be sifted fine, but for pots for growing and flowering the plants, it need only be well broken and thoroughly mixed. Seed pots should be drained to nearly one-third of their depth with broken potsherds, but pots for growing plants need only be allowed a couple of inches of drainage. Before filling the pots with soil, a little moss, dry fibrous turf, or half decayed stable litter, should be placed over the draining material to prevent the soil from being washed down into the latter. Seed pots should be filled to three-fourths of an inch from the surface, pressing down the soil moderately firm, and finishing off with a smooth level surface for the reception of the seed. The latter should be sown thinly and evenly (malis always sow too thickly), lightly pressing it down into the soil with the hand, or with a flat circular piece of board. Large seeds such as Convolvulus, Lupin, Nasturtium, Sweet Pea, etc., may be covered over to a depth of half an inch, but smaller seeds such as Aster, Candytuft, Dianthus, Phlox, Stocks, Pansy, etc., require a slight covering, while very small seeds such as Antirrhinum, Mesembryanthemum, Mimulus, Petunia, Poppy, etc., only require the merest sprinkling of earth. Water should be given immediately after sowing from a watering pot with a very fine rose, and the supply repeated every afternoon, except during the occurrence of damp weather. Shade should be given during the hot hours of the day or from 10-30 A.M. to 3-30 P.M., until the seedlings are well above ground, or have made their secondary leaves and then entirely withdrawn. Protection should also be afforded from inclement weather, especially before the seeds have germinated or while the seedlings are very small.

Seedlings are too frequently ruined by excessive shade and forcing during the earlier stages. A steady regular growth should be aimed at with as much light

as the plants can stand. If the seeds are sown too thickly and forced into growth in the shade, large numbers invariably "damp off" and lanky specimens are produced which are weak in constitution.

When sown in seed-beds or in their permanent quarters in the ground, the soil should be well broken up, manured with leaf-mould and thoroughly decomposed cow or horse manured, and the seeds sown on a carefully prepared surface, covering them over with fine soil according to their sizes, and as in pot culture, watering immediately after sowing unless the soil is moist, and giving the same shade from the sun and protection from inclement weather.

When grown in the plains, annuals may be divided into two great classes of Winter and Summer season kinds, according as they are sown in autumn or during the summer months; but in the hills, where they are usually all sown in spring or the early summer months, the same classification cannot be made to apply. For purposes of convenience, I shall follow the division natural to the plains, offer a selection of the best of each group, give a short description of each, together with a few brief hints on their cultural treatment, and time of sowing in the plains and hills.

Grass Lawns and Borders.

No flower garden is complete without a lawn or border of grass. If properly constructed at the commencement and given correct after-treatment, the result should be *permanently* good. Ordinary "Doob" grass (*Cynodon dactylon*) gives the best and most serviceable results.

The ground should be first dug over and pulverized to a depth of 1 to 1½ feet and thoroughly flooded with water. As soon as it is in a workable condition the levelling must be attended to, after which a six-inch layer of good farmyard manure is placed over the surface. The latter is now thoroughly mixed with the soil by another digging, and again flooding is necessary

to render the whole a homogeneous mass. When the soil has dried sufficiently it may be lightly dug over, finally levelled and raked off.

"Doob" grass is now collected from the fields or roadsides, chopped up into three-inch lengths and inserted in tufts two inches apart by dibbling into the soil. This is followed by a light rolling, and until the new grass appears kept well watered and weeded. The grass should not be cut until it grows to a height of six inches, the object of this is to establish a strong rooting system. The first cutting should be made with the sickle or "durati," care being taken not to pull up the roots.

The future success of the lawn or border now depends on rolling, cutting, weeding and watering. With an annual top dressing of sifted manure and leaf mould in equal proportions, preferably given after the rains, and the foregoing treatment, a good permanent lawn should be the result. This applies to the plains and hills up to 4,000 feet elevation.

For elevations above 4,000 feet the ground should receive similar treatment, but a mixture of lawn grass seed sown and raked into the soil during the spring or early autumn, instead of planting "doob" grass, and a top dressing given during November, this latter affording manure, and protection during the winter.

WINTER SEASON FLOWERING ANNUALS.

Abronia umbellata.

A pretty plant of trailing habit with rose-coloured Verbena-like flowers. For pots, transplant 3 plants to a 12-inch pot; beds, at 9 inches apart; borders, plant near front row in lines, or groups of 3 or 4 plants to the square foot of ground. PLAINS. Sow about middle of October. HILLS. April-May.

Acroclinium roseum.

An erect growing annual, about one foot high, bearing white and rose-coloured everlasting flowers. For pots, allow 6 or 8 plants to a 12-inch pot; beds, transplant to 6 inches apart; borders, in patches of 6 or 8 plants to a square foot of ground. PLAINS. Sow during October. HILLS. March-May.

Adonis aestivalis.

A plant with finely divided foliage, 6 to 9 inches high, bearing bright scarlet flowers. For pots, transplant 3 plants to a 12-inch pot; beds, 6 inches apart; borders, groups of 5 or 6 plants to the square foot of ground. PLAINS. Sow during October. HILLS. March-April.

Ageratum mexicanum.

A bushy plant, from ½ a foot to 2 feet high, bearing pale or dark blue flowers. The dwarf varieties are neat and compact, but the tall kinds are rather weedy. Pots, transplant 1 plant to a 12-inch pot; beds, 1 foot apart; borders, groups of 2 or 3 plants. PLAINS. Sow during September-October. HILLS. March-May.

Agrostemma.

ROSE CAMPION.

There are several varieties of this. All are of loose trailing habit, from 1½ to 2 feet high, bearing white and red flowers. Not showy in pots but look well in a mass. For beds, transplant at 15 inches apart. PLAINS. Sow in October. HILLS. March-May.

Agrostis.

An ornamental grass. Several species are grown, but

A. pulchella is considered the best. For pots, transplant 8 or 10 plants to the 12-inch pot. Not usually grown in beds, but might look well if planted at 6 inches apart. PLAINS. Sow in October. HILLS. March-May.

Alonsoa Warscewiczii.

MASK FLOWER.

A plant of loose open habit, about one foot high, bearing bright scarlet flowers. For pots, transplant 5 plants to a 12-inch size; beds, 6 inches apart; borders, groups of 5 or 6 plants to the square foot of ground. PLAINS. Sow in October. HILLS. March-May.

Althæa rosea.

HOLLYHOCK.

A tall handsome perennial with an annual stem, average height 6 feet, bearing large handsome flowers of various colours. Has *not* sufficient root room in a pot. Beds, transplant at 18 inches apart; borders, in groups of 3 or 4 plants at the back of the border, or in regular rows in the same position at 18 inches apart. PLAINS. Sow in October. HILLS. March-June.

Alyssum maritimum.

SWEET ALYSSON.

A dwarf plant, about 6 inches high, bearing small white sweetly-scented Candytuft-like flowers. For pots, transplant 4 or 5 plants to a 12-inch size, beds, at 4 or 5 inches apart, borders, in groups of 6 or 8 plants to the square foot of ground towards the front line. PLAINS. Sow in October. HILLS. March-May.

Ammobium alatum.

WINGED EVERLASTING.

A plant of loose habit, with a few small leaves and winged stems, about 2 feet high, bearing small yellow and white everlasting flowers. Not showy in pots, but looks well when in a mass in beds or in borders. Transplant at 18 inches apart. PLAINS. Sow in October. HILLS. March-May.

Anagallis arvensis.

PIMPERNEL.

Several varieties of this are grown. All are dwarf trailing plants, from 4 to 6 inches high, bearing bright blue flowers. Not very showy in pots, but makes a good edging for a bed. Transplant at 3 or 4 inches apart. PLAINS. Sow in October. HILLS. March-May.

Anemone hortensis.

A plant of dwarf habit, about 6 inches high, bearing handsome flowers of various colours. Only suitable for

pots. Transplant 5 or 6 plants to a 12-inch size. Water freely. PLAINS. Sow in October. HILLS. March-May.

Antirrhinum majus.

SNAP-DRAGON.

A handsome flowering plant, from 1 to 3 feet high, bearing flowers of various colours. For pots, transplant 1 plant to a 12-inch size; beds, 12-inches apart, borders, groups of 6 or 8 plants to 2 square feet of ground. PLAINS. Sow in October. HILLS. March-June, also autumn with protection.

Arctotis grandis.

A South African Daisy-like annual, of easy culture, producing flowers on long stalks most useful for cutting. The flowers are pure white, lilac on the outside with a lavender coloured disc. May be planted out one foot apart in beds, or grown singly in 10-inch pots. PLAINS. Sow in October. HILLS. February and March.

Asperula.

WOODRUFF.

Pretty plants, about one foot high, bearing white and blue flowers. For pots, transplant 5 plants to a 12-inch size; beds, 6 inches apart; borders, groups of 6 or 8 plants to the square foot of ground. PLAINS. Sow in October HILLS. March-May.

Callistephus hortensis.

ASTER.

Handsome flowering plants, from 6 to 18 inches high. For pots, transplant 3 or 4 plants to a 12-inch size; beds, 9 inches apart; borders, groups of 6 or 8 plants to the square foot of ground. PLAINS. Sow in September-October. HILLS. March-May.

Bartonea aurea.

A showy annual, about 18 inches high, with handsome yellow flowers. For pots, transplant 1 plant to the 12-inch size; beds 12 inches apart; borders, groups of 4 or 5 plants to the square foot. PLAINS. Sow in October. HILLS. March-May.

Brachycome iberidifolia.

A pretty plant, from 9 to 12 inches high, bearing white, pale and deep blue flowers. For pots, transplant 5 plants to the 12-inch size; beds, 6 inches apart; borders, in groups of 5 or 6 plants to the square foot. PLAINS. Sow in October. HILLS. March-May.

Briza.

Pretty ornamental grasses. Several varieties are grown. For pots, transplant 8 or 9

plants to the 12-inch size; beds, 4 inches apart. Not conspicuous in borders. PLAINS. Sow in October. HILLS. March-May.

Browallia.

Elegant half hardy annual, 1 to 1½ feet high, with glossy green foliage. Two varieties are grown, white and blue, of which the latter is the general favourite. For pots transplant 8 or 9 to the 12-inch size; beds and borders about 4 inches apart. PLAINS. Sow in October. HILLS. March-April.

Calandrinia.

ROCK PURSLANE.

Plants of loose trailing habit, from 9 to 18 inches high, bearing rosy purple flowers. For pots, transplant 3 or 4 plants to the 12-inch size; beds, 6 to 9 inches apart; borders, groups of 3 or 4 plants to the square foot of ground. PLAINS. Sow in October. HILLS. March-May.

Calceolaria hybrida.

SLIPPER WORT.

A most showy flowering plant, with flowers of various colours, but seldom opens its flowers in the plains. Can only be recommended for the hills. There it may be sown in autumn. Transplant singly in small pots, and to pots of a larger size as they advance in growth. Protect from frost. A cool steady treatment is necessary.

Calendula officinalis.

POT MARIGOLD.

A handsome flowering plant, about 1 foot high, bearing pale yellow and deep orange flowers. For pots, transplant 1 plant to a 12-inch size beds, 9 to 12 inches apart borders, in groups of 6 or 8 plants to 2 square feet of ground. PLAINS. Sow in September-October. HILLS. March-September.

Calendula pluvialis.

CAPE MARIGOLD.

A plant of loose trailing habit, about 18 inches high, bearing white Ox-Eye Daisy-like flowers. Not showy in pots, but looks well in masses. For beds, transplant at 12 inches apart. PLAINS. Sow in October. HILLS. March-May.

Callirhoe involucrata.

POPPY MALLOW.

A plant of loose habit, about 18 inches high, bearing large dark purplish crimson flowers. For pots, transplant 3 or 4 plants to the 12-inch size; beds, 12 inches apart; borders, groups of 4 or 5 plants to the square foot of ground. PLAINS. Sow in October. HILLS. March-May.

Campanula.

Handsome flowering plants, from 12 to 18 inches high, with bell-shaped flowers (Canterbury Bells) of various colours. For pots, transplant 3 or 4 plants to the 12-inch size; beds, 6 to 12 inches apart; borders, groups of 6 or 8 plants to the square foot of ground. PLAINS. Sow in October. HILLS. March-May, and during autumn with protection.

Iberis umbellata.

CANDYTUFT.

Dwarf compact plants, from 6 to 12 inches high, bearing purplish and pure white flowers. For pots, transplant 3 or 4 plants to the 12-inch size; beds, 6 inches apart; borders, groups of about a dozen plants to 2 square feet of ground. PLAINS. Sow in October. HILLS. March-May.

Carnation.

A well-known family of plants, from 9 to 18 inches high, bearing sweetly-scented flowers of various colours. They seldom flower in the plains until the second year, and as they can only be kept alive with difficulty through the rainy season, and some varieties not at all, they are only really suited for the hills. In the plains, seeds may be sown in October, and the seedlings transplanted singly into small pots, and again to pots of a larger size as they advance in growth. If they can be saved through the rains, they will flower during the following cold season. A fair amount of success is obtained from young plants sent down from the hills during October-November. HILLS. Sow from March to June, and during the autumn with protection.

Centaurea Cyanus.

BLUE BOTTLE.

Centaurea moschata.

PURPLE AND RED FLOWERED SWEET SULTAN.

Centaurea suaveolens.

YELLOW SWEET SULTAN.

Handsome flowering plants, from 1½ to 3 feet high, bearing showy flowers of various colours. They are as a rule rather tall for pots, but if not more than one plant is planted in the 12-inch size, they will often flower well in such. For beds or borders, they may all be transplanted at 12 inches apart. PLAINS. Sow in October. HILLS. March-May.

Centranthus macrosiphon.

A handsome plant, about 18 inches high, bearing rosy purple flowers. For pots, transplant 1 plant to the 12-inch size; beds, 12 inches apart; borders, groups of 3 or

4 plants to the square foot of ground. PLAINS. Sow in October. HILLS. March-May.

Chrysanthemum Burridgeanum.

TRICOLOURED OX-EYE DAISY.

Chrysanthemum carinatum.

TRICOLOURED CHRYSANTHEMUM.

Chrysanthemum Leucanthemum.

OX-EYE DAISY.

Chrysanthemum segetum.

YELLOW CORNFLOWER.

Handsome flowering annuals, from 1 to 2 feet high, bearing showy single and double flowers. For pots, transplant 1 plant to the 12-inch size; beds, 12 to 18 inches apart; borders, in groups of 5 or 6 plants towards the centre of the border. PLAINS. Sow in October. HILLS. February-May.

Cineraria Hybrida.

A handsome flowering plant, from 9 to 15 inches high, bearing large umbels of daisy-like flowers of various colours. Only suited for pot culture. Transplant the seedlings singly into small pots, and transfer to larger pots as they advance in growth. Give plenty of water, and keep the pots in a partially shaded well-sheltered place during the cold months, and on the advent of mild spring weather gradually expose them to an open sunny position. PLAINS. Sow in September-October. HILLS. August-September, with protection, and March-April.

Clarkia.

Favourite annuals, averaging about 18 inches high, bearing pretty white pink, purple and salmon-coloured flowers. For pots, transplant 1 plant to the 12-inch size; beds, 9 to 12 inches apart; borders, groups of 4 or 5 plants towards the back of the border. PLAINS. Sow in October. HILLS. January to March.

Clianthus Dampierii.

GLORY PEA.

A straggling plant, from 9 to 18 inches high, bearing large scarlet pea-shaped flowers. Only suited for pot culture. Requires a light sandy soil, and a little well decayed leaf-mould, but no strong rich manure should be given. Transplant the seedlings carefully into small sized pots, and transfer to larger sizes as they advance in growth. Water sparingly, and give as much sun and light as possible during the whole period of growth. PLAINS. Sow in September-October. HILLS. March-April.

Collinsia.

Handsome flowering annuals, about 15 inches high, bearing white and light purple-coloured flowers. For pots, transplant 5 plants to the 12-inch size; beds, 9 inches apart; borders, in groups of 6 or 8 plants to the square foot of ground. PLAINS. Sow in October. HILLS. March-May.

Convolvulus minor.

A plant of trailing habit, stems from 15 to 18 inches long, but only raised a few inches above the ground, bearing deep blue and blue and white flowers about 1½ inch in diameter. For pots, transplant 5 plants to the 12-inch size; beds, 6 to 9 inches apart. Not suited for grouping in borders. PLAINS. Sow in October. HILLS. March-May.

Coreopsis.

Dwarf plants, with tall, erect flower stems, bearing yellow and brownish-red flowers. For pots, transplant 1 plant to the 12-inch size; beds, 12 inches apart; borders, groups of 6 or 8 plants towards the back of the border. PLAINS. Sow in October. HILLS. February-May.

Cosmos bipinnatus.

A tall growing annual, with finely divided leaves, bearing pink, rosy-pink and white flowers. Not suited for pots. For beds, transplant at 9 inches apart; borders, in groups of 5 or 6 plants towards the back of the border. PLAINS. Sow in October. HILLS. March.

Bellis perennis.

DAISY.

A well-known dwarf plant. For pots, transplant 5 plants to the 12-inch size; beds, 4 to 6 inches apart; borders, in lines, at 3 or 4 inches apart. PLAINS. Sow in October. HILLS. March-May.

Dahlia.

A well-known perennial, with an annual stem. The large double varieties are not suited to the plains, but the single varieties will flower at the commencement of the hot weather, if sown in October and planted in the ground at a foot apart. HILLS. Sow from March to May. All varieties thrive well at high elevations.

Dianthus chinensis.

CHINESE OR INDIAN PINK.

Erect plants, about one foot high, bearing pretty single and double flowers of various colours. For pots, transplant 1 plant to the 12-inch size beds, 1 foot apart; borders, in groups of 4 or 5 plants to the square foot of ground. PLAINS. Sow in October. HILLS. March-May, and during autumn with protection.

Digitalis Purpurea.

FOXGLOVE.

Suitable for hills only. Erect stately flowering plants, in shrubbery or beds they are equally striking and effective. Sow thinly in boxes in autumn under cover. Pick out when large enough to handle 3 inches apart, and plant out in the spring 18 inches apart.

Eschscholtzia Californica.

CALIFORNIAN POPPY.

A dwarf plant, with pale and orange yellow poppy-like flower. For pots, transplant 3 plants to the 12-inch size; beds and borders, sow the seeds in the ground and thin out to 1 foot apart. This plant will bear to be transplanted, but it flowers much better when sown and grown in the ground. PLAINS. Sow in October. HILLS. March-May.

Gaillardia.

BLANKET FLOWER.

A handsome plant, about 1½ feet high, bearing large orange, red, and yellow single and double flowers. For pots, transplant 1 plant to the 12-inch size; beds, 1 foot apart; borders, groups of 5 or 6 plants to the square foot of ground. PLAINS. Sow in October. HILLS. March-May.

Gamolepis tagetes.

A dwarf compact plant, about 9 inches high, bearing bright yellow single flowers. For pots, transplant 3 plants to the 12-inch size; beds, 1 foot apart; borders, as an edging, or in groups of 5 to 6 plants to the square foot. PLAINS. Sow in October. HILLS. March-April.

Gauria grandiflora.

A plant of loose habit, about 2 feet high, bearing handsome white flowers in great profusion. For pots, transplant 1 plant to the 12-inch size; beds, 15 inches apart; borders, in groups of 3 or 4 plants about the centre of the border. PLAINS. Sow in October. HILLS. March-May.

Gilia.

Dwarf plants, with tall flower stems, bearing pretty white lilac and purple flowers. Not showy in pots but look well in a mass. For beds or borders, transplant at 6 inches apart. PLAINS. Sow in October. HILLS. March-May.

Godetia.

Free blooming annuals, from 1½ to 2 feet high, bearing crimson, lilac, rosy-purple and white flowers. For pots, transplant 1 plant to the 12-inch size; beds, 12 to 15 inches apart; borders, in groups of 4 or 5 plants to the square foot of ground. PLAINS Sow in October. HILLS.

March-May, and autumn with protection.

Helianthus annuus.

SUN-FLOWER.

Well-known tall growing annuals, with large single and double yellow flowers. Some of the dwarf double varieties may be grown in pots, but all thrive very much better in the ground. For beds, transplant to 18 inches apart; borders, in groups or lines towards the back of the borders. In the plains, sun-flowers may be grown as cold or summer season annuals. For cold weather flowering, sow in October; for the summer season, sow in June-July. HILLS. Sow from March to June.

Helichrysum.

EVERLASTING.

Tall growing annuals, bearing white, pink, purple and yellow coloured everlasting flowers. Not showy in pots. For beds, transplant to 18 inches apart; borders, in groups of 4 or 5 plants, or in regular lines towards the back of the border. PLAINS. Sow in October. HILLS. March-May.

Ipomopsis elegans.

An erect handsome annual, about 2 feet high, bearing tube-shaped flowers of a yellow, orange, and orange red colour. For pots, transplant 3 plants to the 12-inch size; beds, 9 inches apart; borders, groups of half a dozen plants towards the centre of the border. PLAINS. Sow in October. HILLS. March-May.

Senecio elegans.

JACOBÆA.

A plant with pretty foliage, bearing light and deep purple and white flowers. For pots, transplant 5 plants to the 12-inch size; beds, 9 inches apart; borders, in groups of 5 or 6 plants to the square foot of ground. PLAINS. Sow in October. HILLS. March-May.

Kaulfussia ameloides.

A dwarf Aster-like annual, bearing bright blue, crimson, and dark violet flowers. For pots, transplant 3 plants to the 12-inch size; beds, 6 inches apart; borders, in groups towards the front. PLAINS. Sow in October. HILLS. March-May.

Lagurus ovatus.

A pretty dwarf ornamental grass. For pots, transplant 5 plants to the 12-inch size; beds, 6 inches apart. Not conspicuous in borders. PLAINS. Sow in October. HILLS. April-May.

Lamarkia aurea.

Similar to the last. For pots, transplant 6 or 8 plants to the 12-inch size; beds, 4 to 6 inches apart. Not conspicuous in borders. PLAINS. Sow in October. HILLS. April-May.

Larkspur.

Well-known annuals, from 1 to 3 feet high, bearing blue, purple, rose and white, single and double flowers. For pots, plant 1 plant of both dwarf and tall varieties to the 12-inch size; beds, from 6 to 9 inches apart; borders, in groups of 5 or 6 plants to the square foot of ground. PLAINS. Sow in October. HILLS. March-May, and autumn with protection.

Leptosiphon.

Dwarf compact annuals, bearing purple, white and yellow flowers. For pots, transplant 5 plants to the 12-inch size; beds, 6 inches apart; borders, as an edging only. PLAINS. Sow in October. HILLS. March-May.

Linaria.

Pretty annuals, from 6 inches to 1½ feet high. For pots, transplant all varieties, 5 plants to the 12-inch size; beds, dwarf varieties, 6 inches apart, tall, 1 foot apart; borders, in groups of 5 or 6 plants. PLAINS. Sow in October. HILLS. March-May.

Linum grandiflorum.

A plant of loose habit, about 1½ feet high, bearing light or bright crimson flowers. For pots, transplant 5 plants to the 12-inch size; beds, 1 foot apart; borders, in groups of 5 or 6 plants to the square foot of ground. PLAINS. Sow in October. HILLS. March-May.

Lobelia erinus.

A neat compact plant, bearing blue, rose, and white flowers. For pots, transplant 6 or 8 plants to the 12-inch size; beds, as an edging at 3 inches apart. Not conspicuous in borders except as an edging. PLAINS. Sow in October. HILLS. March-May, and autumn with protection.

Lupinus.

Tall-growing annuals, bearing handsome spikes of blue, rose, white and yellow flowers. Can be transplanted, but succeed better if sown in their permanent quarters in the ground. PLAINS. Sow in October. HILLS. March-June.

Malope grandiflora.

A plant of loose habit, from 1½ to 2 feet high, bearing large single crimson and white flowers. Not showy in pots. For beds, transplant at one foot apart; borders, in groups of four or five plants. PLAINS. Sow in October. HILLS. March-May.

Tagetes erectus.

AFRICAN MARIGOLD.

Tagetes patula.

FRENCH MARIGOLD.

Handsome annuals, from 1 to 3 feet high, bearing brownish-red, orange and yellow

double flowers. For pots, transplant 1 plant to the 12-inch size; beds, 1 foot apart; borders, in groups of four or five plants. PLAINS. Sow in October, and June-July.

Mesembryanthemum.

Dwarf fleshy leaved plants, bearing yellow, rose, and white flowers. For pots, transplant 4 or 5 plants to the 12-inch size; beds, 6 to 9 inches apart; borders, in groups of 8 or 9 plants, or in rows near the front of the borders. PLAINS. Sow in October. HILLS. March-May.

Reseda odorata.

MIGNONETTE.

A well-known sweetly scented flowering annual. It does not like transplantation. For pots, sow the seeds thinly and weed out to half a dozen plants; beds, sow in lines at a foot apart, or broadcast and weed out to 6 inches apart. PLAINS. Sow in October-November. HILLS. March-September.

Mimulus.

A dwarf plant, with flower stems about a foot high, bearing pretty rose, yellowish and crimson spotted flowers. For pots, transplant 5 plants to the 12-inch size, or grow singly in medium-sized pots; beds, 9 inches apart; borders, groups of 5 or 6 plants to the square foot of ground. PLAINS. Sow in October-November. HILLS. March-May.

Myosotis

FORGET-ME-NOT.

Dwarf plants, bearing small pretty blue flowers. For pots, transplant 5 to 12-inch size; beds, 6 to 9 inches apart; borders, in groups of 5 or 6 plants to the square foot of ground. PLAINS. Sow in October. HILLS. March-June.

Tropæolum majus.

NASTURTIUM.

Well-known dwarf or climbing annuals, bearing scarlet, dark brown, and yellow flowers. For pots, transplant 1 plant to the 12-inch size; beds, dwarf varieties, 1 foot apart, climbing or trailing varieties, 1½ feet apart; borders, in lines or groups, from 12 to 15 inches apart. PLAINS. Sow in October. HILLS. March-June.

Nemophila.

Dwarf soft-wooded plants, bearing cup-shaped flowers of various colours. For pots, transplant 3 plants to a 12-inch size; beds, 1 foot apart; borders, as an edging, or in groups of 5 or 6 plants near the front of the border. PLAINS. Sow in October. HILLS. March-May, and autumn with protection.

Nolana atriplicifolia.

A trailing plant, bearing blue, white and yellow Convolvulus-like flowers. For pots, transplant 3 plants to the 12-inch size; beds, 9 inches apart; borders, in groups near the front of the border. PLAINS. Sow in October. HILLS. March-May.

Nycterinia selaginoides.

A compact plant, about 1 foot high, bearing small star-shaped pink flowers. For pots, transplant 6 or 8 plants to the 12-inch size; beds, 6 inches apart; borders, in lines, or in groups near the front row. PLAINS. Sow in October. HILLS. March-May.

Œnothera.

EVENING PRIMROSE.

Dwarf or tall-growing plants, from 6 inches to 3 feet high. Only the dwarf varieties are suitable for pots. For pots, transplant 3 to 5 plants of the dwarf sorts to the 12-inch pot; beds, dwarf varieties, 6 inches apart, tall kinds, 18 inches, borders, plant in groups, dwarfs near the front line, and tall sorts at the back. PLAINS. Sow in October. HILLS. March-September.

Oxalis rosea.

A pretty dwarf plant, bearing small bright rose flowers in great profusion. For pots, transplant 5 plants to the 12-inch size; beds, 6 inches apart; borders, in groups near the front of the border. PLAINS. Sow in October. HILLS. March-May, and in autumn.

Viola tricolor.

PANSY, HEARTSEASE.

A well-known flowering plant. For pots, transplant singly into small pots, and transfer to larger sizes as the plants advance in growth; beds, transplant at 9 inches apart; borders, in lines at 6 inches apart. PLAINS. Sow in September-October. HILLS. March-May, and in autumn with protection.

Petunia.

A soft-wooded plant, from 1 to 3 feet high, bearing large trumpet-shaped flowers of various colours. For pots, transplant 1 plant to the 12-inch size; beds, 1 foot apart; borders, in groups of 4 or 5 plants about the centre of the border. PLAINS. Sow in September-October. HILLS. March-June, and in autumn with protection.

Phlox Drummondi.

One of the prettiest annuals we possess, from 9 to 15 inches high, bearing pretty single flowers of various colours. For pots, transplant from 3 to 5 plants to the 12-inch pots; beds, 9 inches apart; borders, in groups of 6 or 9

plants, near the front of the border. PLAINS. Sow in October. HILLS. March-May, and during autumn with protection.

Papaver rhœas.

COMMON POPPY.

SHIRLEY POPPY.

Papaver somniferum.

CARNATION POPPY.

Well-known flowering annuals. For pots, allow 1 plant to the 12-inch size; beds, 15 inches apart; borders, in groups, common poppy about the centre, and carnation poppy towards the back of the border. They object to transplanting. PLAINS. Sow in October. HILLS. March-May, and during autumn with protection.

Pyrethrum aureum.

GOLDEN FEATHER.

A dwarf plant with golden foliage, and used for edgings and working out patterns in carpet bedding. For pots, transplant 5 plants to the 12-inch size; beds, for edgings and patterns, 4 inches apart, and prune frequently. PLAINS. Sow in October. HILLS. March-May, and autumn.

Ranunculus asiaticus.

A dwarf plant bearing double and semi-double flowers of various shades. For pots, transplant 5 plants to a 12-inch size; water freely. Not suited for beds or borders. PLAINS. Sow in October. HILLS. March-May.

Rehmannia angulata.

A recently introduced shade-loving plant, bearing spikes of bright pink flowers. Likely to become very popular in the near future. Seeds should be sown in pans, and as the plants advance in growth, transplanted. May be grown singly in 12-inch pots, or bedded out about 18 inches apart. PLAINS. Sow in September-October. HILLS. February-March, and during autumn with protection.

Rhodanthe.

Plants of neat habit, about 1 foot high, bearing crimson, purple, and silvery white everlasting flowers. For pots, transplant 5 plants to the 12-inch size; beds, one foot apart; borders, in groups of 5 or 6 plants towards the front of the border. PLAINS. Sow in October. HILLS. March-May.

Salpiglossis.

Favourite annuals, about 2 feet high, bearing pretty flowers of various shades of colour. For pots, transplant 3 plants to the 12-inch size; beds, one foot apart; borders, in groups of 4 or 5 plants towards the back of the border. PLAINS. Sow in October. HILLS. March-May, and during autumn with protection.

Salvia splendens grandiflora.

A very striking and free flowering plant, producing a mass of dazzling scarlet colour. Sow in pots or boxes and prick out when large enough to handle. May be planted out about 18 inches apart in beds, or grown singly in pots. PLAINS. Sow in October. HILLS. March, and during autumn with protection.

Saponaria calabrica.

A pretty plant of trailing habit, bearing pink and white flowers in great profusion. Not showy in pots but looks well in masses. Beds, transplant at 1 foot apart; borders, in groups of a dozen plants to 2 square feet of ground. PLAINS. Sow in October. HILLS. March-May.

Scabious.

Favourite annuals, from 2 to 3 feet high. Not effective in pots, but showy in masses in the ground. For beds, transplant at 15 or 18 inches apart; borders, in groups of 5 or 6 plants towards the centre of the border. PLAINS. Sow in October. HILLS. March-May.

Schizanthus.

Plants about 1½ feet high, bearing butterfly-like flowers of various shades of lilac, purple, rose and white. For pots, transplant 3 plants to the 12-inch size; beds, 15 inches apart; borders, in groups of 5 or 6 plants towards the centre of the border. PLAINS. Sow in October. HILLS. March-May, also autumn with protection.

Silene pendula compacta.

A plant of neat bushy habit, about 6 inches high, bearing pink and white flowers. For pots, transplant 3 plants to the 12-inch size; beds, as an edging or in the mass, at 6 inches apart; borders, in groups of 6 or 8 plants near the front line. PLAINS. Sow in October. HILLS. March-June.

Sphenogyne speciosa.

A very showy annual, about 1 foot high, bearing large handsome single yellow flowers. For pots, transplant 3 plants to the 12-inch size; beds, at 9 inches apart; borders, in groups of 5 or 6 plants near the front line. PLAINS. Sow in October. HILLS. March-May.

Stock.

A well-known favourite annual. For pots, transplant 1 plant to the 12-inch size; beds, 1 foot apart; borders in groups of 4 or 5 plants near the front line. PLAINS. Sow in October. HILLS. March-May, and during autumn with protection.

Lathyrus odoratus.

SWEET PEA.

A favourite annual. Has not sufficient root room to

fully develop in pots. May be sown in boxes, groups in the ground, and supported on sticks. PLAINS. Sow in October. HILLS. March-June.

Dianthus barbatus.

SWEET WILLIAM.

A dwarf plant, bearing pretty flowers of various colours. Does not as a rule flower in the first year when grown in the plains. For pots, transplant 3 plants to the 12-inch size, stand the pots in an open sunny situation throughout the summer, and the plants will flower in the following cold season. Not suited for beds or borders in the plains. PLAINS. Sow in October. HILLS. March-May or in September.

Tropæolum aduncum.

CANARY CREEPER.

An annual of climbing habit, bearing pretty small yellow flowers. For pots, transplant 3 plants to the 12-inch size, and support the stems on a trellis. Not suited for beds. Borders, sow or plant in groups and furnish sticks for support. PLAINS. Sow in September-October. HILLS. March-June.

Verbena.

Well-known plants of trailing habit. For pots, transplant 3 plants to the 12-inch size; beds, 9 inches apart; borders, in groups of 5 or 6 plants towards the front of the border. PLAINS. Sow in October. HILLS. March-May.

Malcomia maritima.

VIRGINIA STOCK.

A dwarf plant, bearing lilac and white flowers in great profusion. For pots, transplant 6 or 8 plants to the 12-inch size; beds, 6 inches apart; borders, in groups of a dozen plants towards the front of the border. PLAINS. Sow in October. HILLS. March-May.

Wallflower.

An old favourite. Most varieties fail to flower in the plains in the first year, but the common single brown sometimes does, and the common single yellow seldom fails to do so. For pots, transplant 3 plants to the 12-inch size; beds, 9 inches apart; borders, in groups of 5 or 6 plants. The common single yellow should only be made use of for beds and borders. PLAINS. Sow in October. HILLS. March-May, and October with protection.

Whitlavia grandiflora.

A plant of recumbent habit, about 1½ feet high, bearing blue and white bell-shaped flowers. Not showy in pots, but looks well in a mass in the ground. Beds, transplant 15 inches apart; borders, in groups of 5 or 6 plants towards the centre of the border. PLAINS. Sow in October. HILLS. March-May.

SUMMER SEASON FLOWERING ANNUALS.

Amaranthus.

Plants with highly coloured foliage, very ornamental, from 1½ to 3 feet high. For pots, transplant 1 plant to the 12-inch size; beds, 15 inches apart; borders, in groups of 3 or 4 plants towards the back of the border. PLAINS. Sow from beginning of June to end of July. HILLS. April-June.

Balsam.

A well-known flowering annual. For pots, transplant singly into small pots, and transfer to larger sizes as the plants advance in growth. Use very rich soil. Beds, 15 inches apart; borders, in lines or in groups of 3 or 4 plants. PLAINS. Sow from end of June to commencement of September. HILLS. June-July.

Celosia cristata.

COCKSCOMB.

Celosia pyramidalis.

FEATHERY-PLUMED CELOSIA.

Well-known annuals, from 1 to 3 feet high. The dwarf varieties of cockscomb are very ornamental whether in pots or in the ground, but the 3 Feathery-plumed Celosias, owing to their height, are only suitable for the ground. For pots, transplant 1 plant to the 12-inch size, using light sandy soil and a little decayed leaf-mould. Beds and borders, singly or in groups. PLAINS. Sow from June to August. HILLS. June-July.

Clitoria ternata.

A climbing perennial with blue and white pea-shaped flowers, succeeds best when grown as an annual. May be grown in pots, trained over sticks, or on a bamboo trellis, or in similar positions as recommended for Ipomæas. PLAINS. Sow in June-July. HILLS. April-June.

Datura.

A shrubby plant, about 3 feet high, bearing large trumpet-shaped flowers of various shades of purple, white, and yellow. Will flower in pots but succeeds better in the ground. For pots, transplant 1 plant to the 12-inch size; beds, 2 feet apart; borders singly, or in groups of 3 or 4 plants towards the back of the border. PLAINS. Sow in June-July. HILLS. April-June.

Gomphrena globosa.

GLOBE AMARANTH.

Handsome plants, about one foot high, with purple and white globular everlasting flowers. A yellow variety exists, but its flowers are small, and being possessed of a straggling habit, it is not very showy. For pots, transplant 3 plants to the 12-inch size; beds, 1 foot apart; borders, in groups of 5 or 6 plants. PLAINS. Sow in June-July. HILLS. April-June.

Ipomæa Bona-nox.

MOON CREEPER.

Ipomæa coccinea.

STAR GLORY.

Ipomæa hederacea.

IVY-LEAVED CYPRESS VINE.

Ipomæa Nil.

SMALLER MORNING GLORY.

Ipomæa purpurea.

Syn. CONVOLVULUS MAJOR. COMMON MORNING GLORY.

Ipomæa quamoclit.

CYPRESS VINE.

Ipomæa rubro-coerulea.

LARGE BLUE AND WHITE FLOWERED BIND-WEED.

Quick growing climbing annuals, with small or large handsome flowers in various shades of blue, purple, scarlet, violet, and white. Useful for trellises, covering verandahs, or for grouping in borders, or on lawns, supported on sticks. PLAINS. Sow in their permanent quarters, and thin out to 6 inches apart, from the middle of June to beginning of August. HILLS. April to July.

Martynia diandra.

A tall soft-wooded shrub, about 5 feet high, bearing pretty Gloxinia-like flowers. Not suited for pot culture. For borders, sow the seeds in patches of 3 or 4 seeds at the back of the border, weeding out all but the strongest plant. PLAINS. Sow in June-July. HILLS. Not usually grown as it requires a considerable degree of heat.

Mimosa pudica.

SENSITIVE PLANT.

A pretty annual of trailing habit, with sensitive feathery leaves and globular heads of rose-coloured flowers. For pots, transplant 3 plants to the 12-inch size; beds, at 9 inches apart. PLAINS. Sow in June-July. HILLS. May-June.

Mina lobata.

A beautiful climbing subject, freely producing orange and scarlet flowers. Suitable for verandah and trellis work. PLAINS. June-July. HILLS. May-June.

Mirabilis jalapa.

MARVEL-OF-PERU.

Pretty plants with a perennial fleshy root, and annual stems. Can be grown as pot plants, but thrive better in the ground. For pots, transplant 1 plant to the 12-inch size; beds, 12 to 18 inches apart; borders, in groups or 3 or 4 plants about the centre of the border. PLAINS. Sow in May-July. HILLS. April-May.

Pentapetes phœnicea.

An erect plant, about 3 feet high, bearing bright red flowers up the tall stem. Not showy in pots, but looks well in a mass in the ground. For beds, transplant at 6 inches apart; borders, groups of a dozen plants to the square foot of ground towards the back of the border. PLAINS. Sow in June-July. HILLS. May-June.

Portulaca grandiflora.

LARGE-FLOWERED PURSLANE.

A plant of creeping or trailing habit, growing close to the ground, with fleshy stems and leaves, and bearing handsome flowers of various shades of colour. This is one of the best hot weather flowering plants we possess in the plains. For pots, transplant 5 plants to the 12-inch size; beds, 6 to 9 inches apart. Not suitable for borders except as an edging. PLAINS. *Sow from March to May.* HILLS. April to June.

Torenia Fournierii.

A plant of erect bushy habit, about 15 inches high, bearing pretty bluish-purple white throated flowers. This is one of the best rainy season annuals we possess in the plains. For pots, transplant 5 plants to the 12-inch size; beds, 9 to 12 inches apart; borders, in groups of 5 or 6 plants towards the front of the border. PLAINS. Sow from May to July. HILLS. April-June.

Zinnia elegans.

Handsome flowering annuals, from 1 to 3 feet high, bearing large double and single flowers of various shades of colour. For pots, transplant from one to three plants to the 12-inch size; beds, 12 to 18 inches apart; borders, in groups of 5 or 6 plants towards the centre of the border. PLAINS. Sow from June to beginning of September. HILLS. May-June.

In addition to the annuals, classed under Summer Season kinds, the following may be sown in January for flowering during the hot weather months: Gaillardias of sorts, Helianthus cucumerifolius, Helianthus

argophyllus, Hymenanthera angustifolia, and Petunias grown from acclimatised seeds. Sunflowers and Marigolds have been mentioned under Winter Season kinds, but both may also be sown in the plains in June-July for flowering during the rains.

A great deal more pleasure might be derived from the cultivation of bulbous and tuberous rooted plants, but unfortunately the climate of the plains is not suited to the welfare of such plants as Narcissus, Hyacinths, Tulips, Sparaxis, Ixias, Anemones, Liliums, etc. It is true these can be forced into bloom, but it is useless attempting to grow them for future flowering, excepting perhaps Lilium longiflorum for which sometimes a favourably moist situation can be found. There are, however, many bulbous and tuberous rooted plants which are deserving of more attention than is at present devoted to them. I refer to Hippeastrums (Amaryllis), of which there are many magnificent varieties. Richardias, Crinums, Eucharis, Marantas, Caladiums, Dahlias, etc., are worthy subjects. Care should at all times be taken to prevent the bulbs or tubers from "drying out" through exposure to dry and hot atmosphere. If found necessary to transplant they should be immediately transferred to a compost of chiefly leaf mould and sand. The less such roots are interfered with during the growing period the better. Rich top dressings may be given with advantage when the plants are in full growth.

GENERAL INDEX.